U.S. Army Simulation, Training and Instrumentation Command

Command Forecast

FY 1995-1999

November 1994

Simulation, Training and Instrumentation Command Forecast

Introduction and Outline

Introduction

The information in this FORECAST has been prepared as an overview of the STRICOM mission, and the overall projections for the next five years which identifies future business opportunities for industry.

The listed programs are known requirements; however, some programs are not funded or are partially funded. Anticipated reduction in the 95-99 funding may result in several program starts being delayed to later years than shown herein.

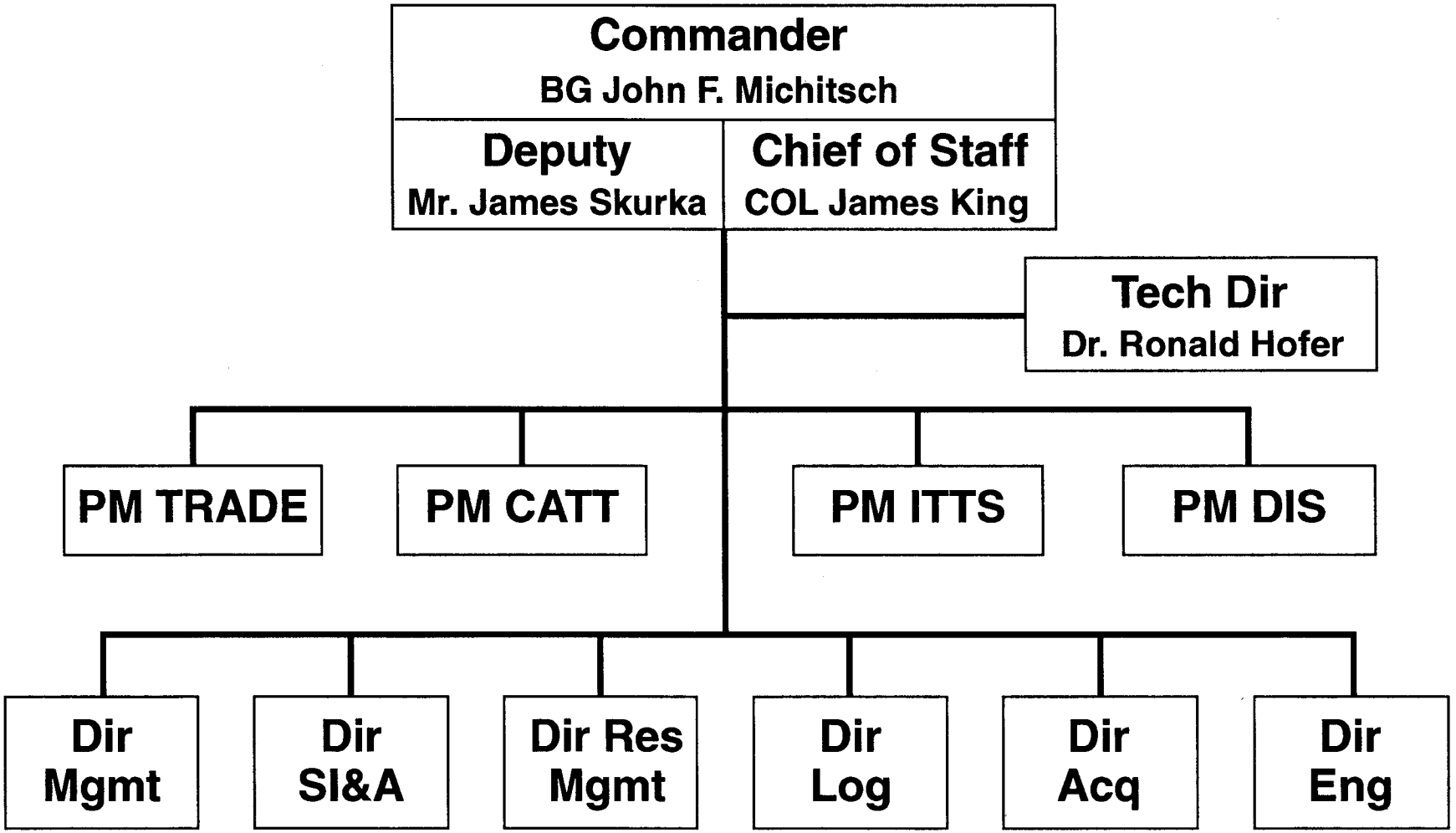
Contents

STRICOM
(Activated 1 August 1992)
Mission

- Technology base for simulation, training, and instrumentation
- DoD technical manager for distributed interactive simulation (DIS) environment
- Acquisition management of:
  - Training devices
  - Instrumentation
  - Targets
  - Threat simulators
  - Simulators and simulations
- Life cycle support of fielded products
- Quality support to the soldier

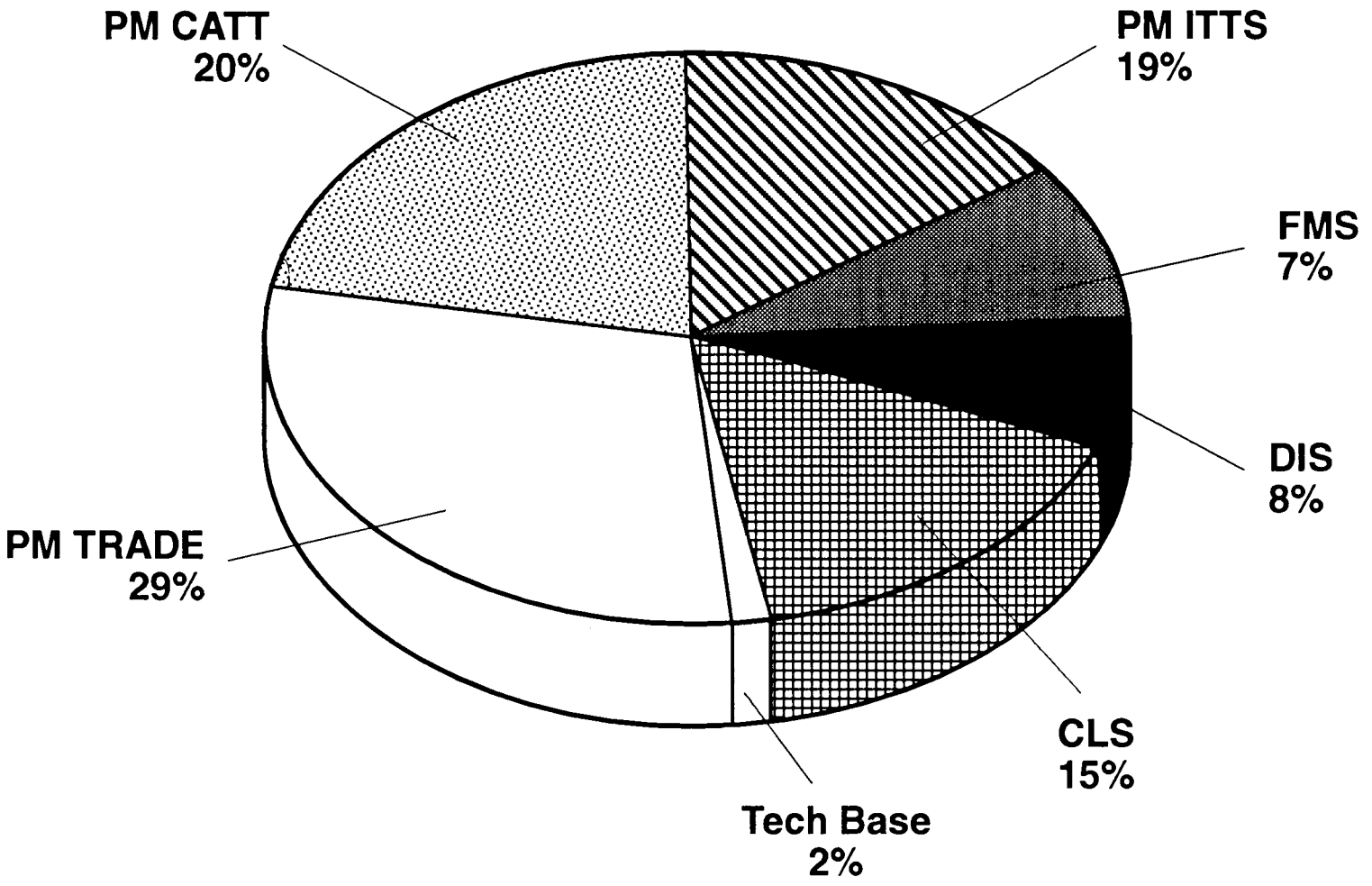
per Carl Druskell
STRICOM
DSN 960-4348

U.S. Army Simulation, Training and Instrumentation Command



Simulation, Training and Instrumentation Command Profile

Relative Investment FY95-99



STRICOM Forecast Program Rollup
FY95-99
FY95

Development	Project Management
ABRAMS M1A2 and Bradley M2/M3 (A3) Maintenance Trainers	PM TRADE
Area Weapons Scoring System (AWSS)	PM TRADE
Defense Satellite Communication System (DSCS) Training Device	PM TRADE
Electronic Combat Systems	PM ITTS
Firefinder AN/TPQ-36 (V8) Trainer	PM TRADE
Fire Support Combined Arms Tactical Trainer (FSCATT)	PM TRADE
Secure Mobile, Anti-Jam Reliable, Tactical Terminal (SMART-T) Trainer	PM TRADE
WARSIM 2000	PM CATT
XMDEWS-Directed Energy Weapons	PM ITTS
2S19-S	PM ITTS
Production	
AH-64+ Apache AGES II	PM TRADE
BCTP After Action Review	PM CATT
Brigade/Battalion Battle Simulator (BBS)	PM CATT
C23 Flight Training Device	PM TRADE
CH-47D Composite Maintenance Trainer Upgrade	PM TRADE
Corps Battle Simulation (CBS)	PM CATT
Crane Simulator (CRANESIM)	Management Directorate
AGES II Instrumentation	PM TRADE
Javelin	PM TRADE
JRTC Live Fire Targetry	PM ITTS
JRTC MOUT-1S (Phase I)	PM TRADE
M1A2 Maintenance Trainer	PM TRADE
MK-19 GMG Gunnery Trainer (Upgrade)	Management Directorate
MK-19 GMG Tactical Engagement Simulator	Management Directorate
Multiple Integrated Laser Engagement System (MILES) 2000	PM TRADE
Special Operations Aviation Combat Mission Simulator (SOACMS) Update	PM TRADE
Tank Weapons Gunnery Simulation System (TWGSS)	PM TRADE
UH-60 Automatic Flight Control System Trainer/Black Hawk Electrical & Avionics Trainer (BEAT)	PM TRADE
UH-60 A/L Electrical Systems Panel Trainer	PM TRADE

STRICOM Forecast Program Rollup (Cont)
FY95-99

FY96

Development	Project Management
Army Integrated Thermal Signature Targets (AITST)	Management Directorate
Dynamic IR Scene Projector	PM ITTS
Frequency Surveillance System	PM ITTS
Hardened Subminiature Telemetry and Sensor System	PM ITTS
Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT)	PM TRADE
NTC Instrumentation Upgrade	PM TRADE
OH-58D Kiowa Warrior Crew Station Mission Equipment Trainer (KW CSMET)	PM TRADE
Tactical Engagement Simulation System (TESS)	PM TRADE
Target Tracking Control System Engineering Services	PM ITTS
Test Support Network	PM ITTS
XM17S	PM ITTS
Production	
Advanced Gunnery Training System (AGTS): M1A2/AG5/M2/M3A3	PM TRADE
Area Weapons Scoring System (AWSS)	PM TRADE
Combat Service Support Training Simulation System (CSSTSS)	PM CATT
Firefinder AN/TPQ-36(V)8 Trainer	PM TRADE
MILES Hand Grenade/Claymore Mines	Management Directorate
MK19 GMG Tactical Engagement Simulator	Management Directorate
OH-58D Kiowa Warrior AGES II	PM TRADE
OPFOR Surrogate Vehicle (OSV)	PM TRADE
Precision Range Integrated Maneuver Exercise (PRIME)	PM TRADE
Simulated Area Weapons Effects/Multiple Integrated Laser Engagement System II (SAWE/MILES II)	PM TRADE
Tank Weapons Gunnery Simulation System (TWGSS)	PM TRADE
TOW-Improved Target Acquisition Sight	PM TRADE
Vessel Bridge Simulator (BRIDGESIM)	Management Directorate

STRICOM Forecast Program Rollup (Cont)
FY95-99
FY97

Development	Project Management
Aviation Combined Arms Tactical Trainer (AVCATT)	PM CATT
JRTC MOUT-IS (Phase II)	Management Directorate
Production	
Advanced Gunnery Training System (AGTS): M1A2/M2/M3A3	PM TRADE
BMP3-S	PM ITTS
Close Combat Tactical Trainer (CCTT)	PM CATT
Combat Training Centers Instrumentation Systems Plan	PM TRADE
Defense Satellite Communication System (DSCS) Training Device	PM TRADE
Fire Support Combined Arms Tactical Trainer (FSCATT)	PM TRADE
Improved Target Acquisition System	PM TRADE
JRTC MOUT-Instrumentation (Phase II)	Management Directorate
M2/M3A3 Maintenance Trainer	PM TRADE
MILES 2000	PM TRADE
OH-58D Kiowa Warrior Crew Station Mission Equipment Trainer (KW CSMET)	PM TRADE
SAWE/MILES II	PM TRADE
Secure Mobile, Anti-Jam Reliable, Tactical Terminal (SMART-T) Trainer	PM TRADE
Tank Weapons Gunnery Simulation System (TWGSS)	PM TRADE

STRICOM Forecast Program Rollup (Cont)
FY95-99

FY98

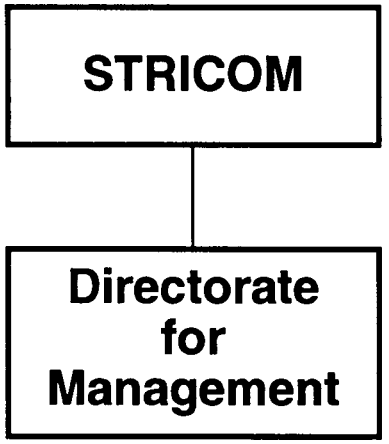
Development	Project Management
Advanced Field Artillery System/Future Armored Resupply Vehicle (AFAS/FARU)	PM TRADE
Production	
2S19-S	PM ITTS
Advanced Gunnery Training System (AGTS): M1A2/M2/M3A3/AGS	PM TRADE
Army Integrated Thermal Signature Targets (AITST)	Management Directorate
Defense Satellite Communication System (DSCS) Training System	PM TRADE
Fire Support Combined Arms Tactical Trainer (FSCATT)	PM TRADE
HOKUM-X	PM ITTS
Intelligence/Electronic Warfare Tactical Proficiency Trainer (IEWTPT)	PM TRADE
Multiple Integrated Laser Engagement System (MILES 2000)	PM TRADE
OPFOR Surrogate Vehicle (OSV)	PM TRADE
Tactical Engagement Simulation System (TESS)	PM TRADE
Tank Weapons Gunnery Simulation System (TWGSS)	PM TRADE

STRICOM Forecast Program Rollup (Cont)
FY95-99

FY99

Development	Project Management
Production	
IEWTPT	PM TRADE
MILES 2000	PM TRADE
OSV	PM TRADE
WARSIM 2000	PM CATT

STRICOM Program Development Management Directorate



Program development and concept exploration/definition is performed in the Directorate for Management. Research and development and/or production contracts are executed by STRICOM (or weapon system) Project Manager upon completion of a successful milestone decision.

Management Directorate

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Army Integrated Thermal Signature Targets (AITST)			R&D			Prod	
Joint Readiness Training Center – Military Operations on Urban Terrain – Instrumentation (Phase II)				R&D		Prod	
MILES Hand Grenade/Claymore Mines			Prod				
MK19 GMG Gunnery Trainer (Upgrade)			Prod				
MK19 GMG Tactical Engagement Simulator			R&D	Prod			

Management Directorate

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Crane Simulator (CRANESIM)		Prod					
Vessel Bridge Simulator (BRIDGSIM)			Prod				

Program Development consists of several activities prior to program Milestone Decision II or III. Activities range from Pre-Milestone 0 analysis through In Process Reviews. Program development consists of, but is not limited to, acquisition strategies, task analysis, program schedules, concept formulation, requirements definition, insertion of technology, cost estimates, program documentation and simulation plans. These activities are tailored to meet specific program needs.

Management Directorate
Narrative Descriptions

Army Integrated Thermal Signature Targets (AITST)

AITST consists of thermal target and scoring subsystems used on live/laser fire ranges worldwide. Targets will realistically depict friendly/threat vehicles for direct fire gunnery programs of tank, antitank, helicopter, Bradley and future Armored System Modernization (ASM) weapon systems. The scoring subsystems provides accurate scoring of rounds fired from vehicle/aviation weapon systems. Scoring system will indicate target hit/miss, near misses, and round location/discrimination. (Mr. Rybat, (407) 380-4476, AMSTI-MC)

Crane Simulator (CRANESIM)

The CRANESIM will simulate a crane cab, equipped with four interchangeable operator control panels replicating four different types of crane controls. The simulator will provide for the replication and activation of the controls, performance, instruments, and working environment of a ship-mounted and truck-mounted crane system. (Mr. Rybat, (407) 380-4476, AMSTI-MC)

JRTC MOUT-Instrumentation (Phase II)

This project will develop and field an instrumentation system to satisfy a unique requirement to support Military Operations in Urban Terrain (MOUT) assessment at the Joint Readiness Training Center (JRTC), Fort Polk, LA. The system is required to realistically duplicate a MOUT environment. System capabilities include: conduct of live fire exercises, assessment of company through team level operations, monitor individual movements throughout the complex, capture real-time data (After Action Reviews), control targets from remote location with reaction time/hit/miss reporting capability, and provide centralized visual observation and control of facilities. (Ms. Ograyensek, (407) 380-4430, AMSTI-MC)

Management Directorate
Narrative Descriptions

MILES Hand Grenade/MILES Claymore Mine

The MILES compatible Hand Grenade will simulate the effects of the current high-explosive grenade. The MILES compatible Claymore Mine will simulate the effects of the current M18A1 anti-personnel mine. Both systems will provide the observer controllers and/or small unit leaders, as well as the soldier, a means to observe the casualty producing effects of its respective weapon system. These devices will be used primarily during force-on-force Military Operations on Urbanized Terrain (MOUT) and tactical training from squad to brigade level. (Ms. Ograyensek, (407) 380-4430, AMSTI-MC)

MK-19 Grenade Machine Gun (GMG) Gunnery Trainer

The MK-19 GMG Gunnery Trainer will provide basic and advanced gunnery skills training in a classroom environment at both the institutional and unit level. The training exercises will include single and multiple targets, either still or moving, in a variety of realistic scenarios. The device will be instructor operated, providing scoring, record and evaluation feedback to the gunner and instructor. (Mr. Lawrence, (407) 380-4628, AMSTI-MC)

Management Directorate
Narrative Descriptions

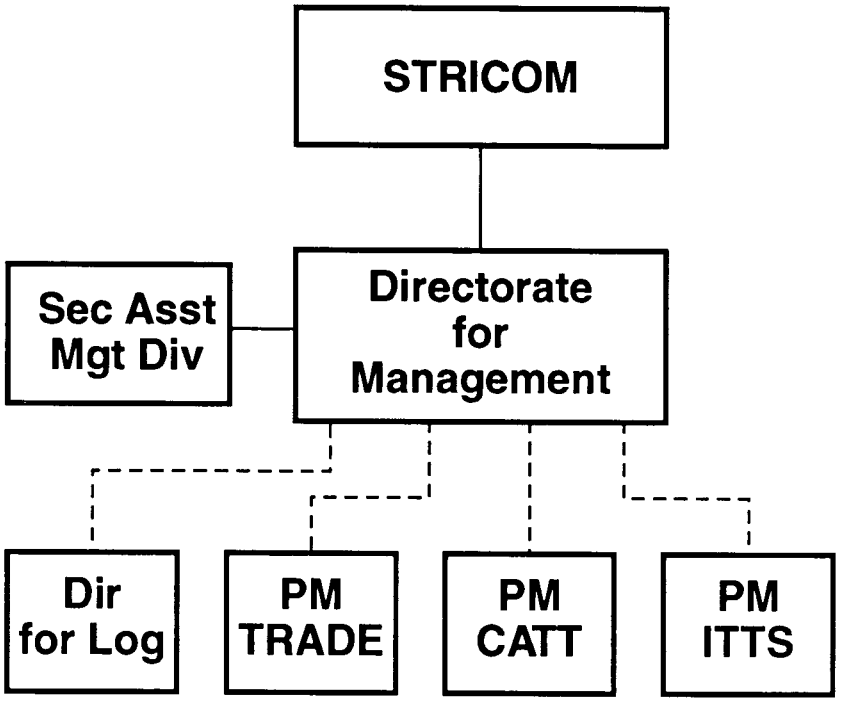
MK-19 Grenade Machine Gun (GMG) Tactical Engagement Simulator (TES)

The MK-19 GMG TES will provide gunners and small unit leaders the capability of engaging in MILES type Force-On-Force training exercises using the MK-19 GMG in a direct line of sight, overhead suppression to visible targets, or observer controlled indirect fire. (Mr. Lawrence, (407) 380-4628, AMSTI-MC)

Vessel Bridge Simulator (BRIDGESIM)

The BRIDGESIM will be a replica of a fully functioning, generic vessel bridge, complete with steering controls, radar, and functional instrumentation. The simulator will provide for replication and activation of the controls, performance instruments, and communications of a modern commercial vessel. (Mr. Rybat, (407) 380-4476, AMSTI-MC)

Security Assistance Program
(Foreign Military Sales)



The Security Assistance program is managed by the Directorate for Management. After Foreign Military Sales (FMS) cases are implemented, contracts are executed by the assigned project director, either in project manager organization or Directorate of Logistics. The Directorate for Management (Security Assistance Management Division) maintains oversight for program execution through case closure.

Foreign Military Sales (FMS) Acquisitions Active Programs

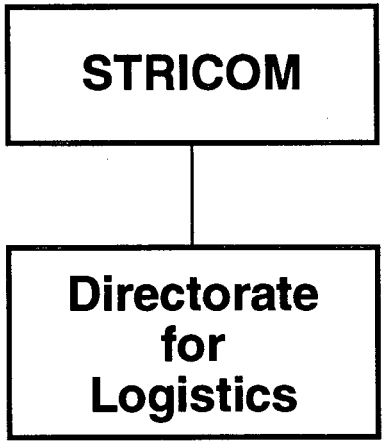
Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Canada							
JANUS		Prod					
Italy							
Small Arms Weapon Trainer (Rifle)		Prod					
Kuwait							
M1A2 PCOFTS, MILES, PRIME, Turret Maintenance Trainer, Computer Based Trainers, Tank Driver Trainer, TWGSS and BBS		Prod					
Tunisia							
GUARDFIST II		Prod					

Foreign Military Sales (FMS) is a non-appropriated program through which eligible foreign governments purchase defense articles, services, and training from the United States Government. The purchasing government pays all costs that may be associated with a sale. STRICOM POC is Mr. John Danielle, (407) 249-3179, AMSTI-MF.

Foreign Military Sales (FMS)
Acquisitions Active Programs (Cont)

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Saudi Arabia **M60A3 VIGS**		Prod					
M1A2 Tank Platoon and Unit Conduct of Fire Trainers (PCOFT/UCOFT), Driver Trainer, VIGS, Maintenance Trainers, and Computer Based Trainers, and Panel Trainers		Prod					
M2A2 Bradley UCOFT/MCOFT, MILES		Prod					
Light Armor Vehicle (LAV), VIGS, MILES and PGTS. PCOFT: TBD		Prod					

Life Cycle Contractor Support

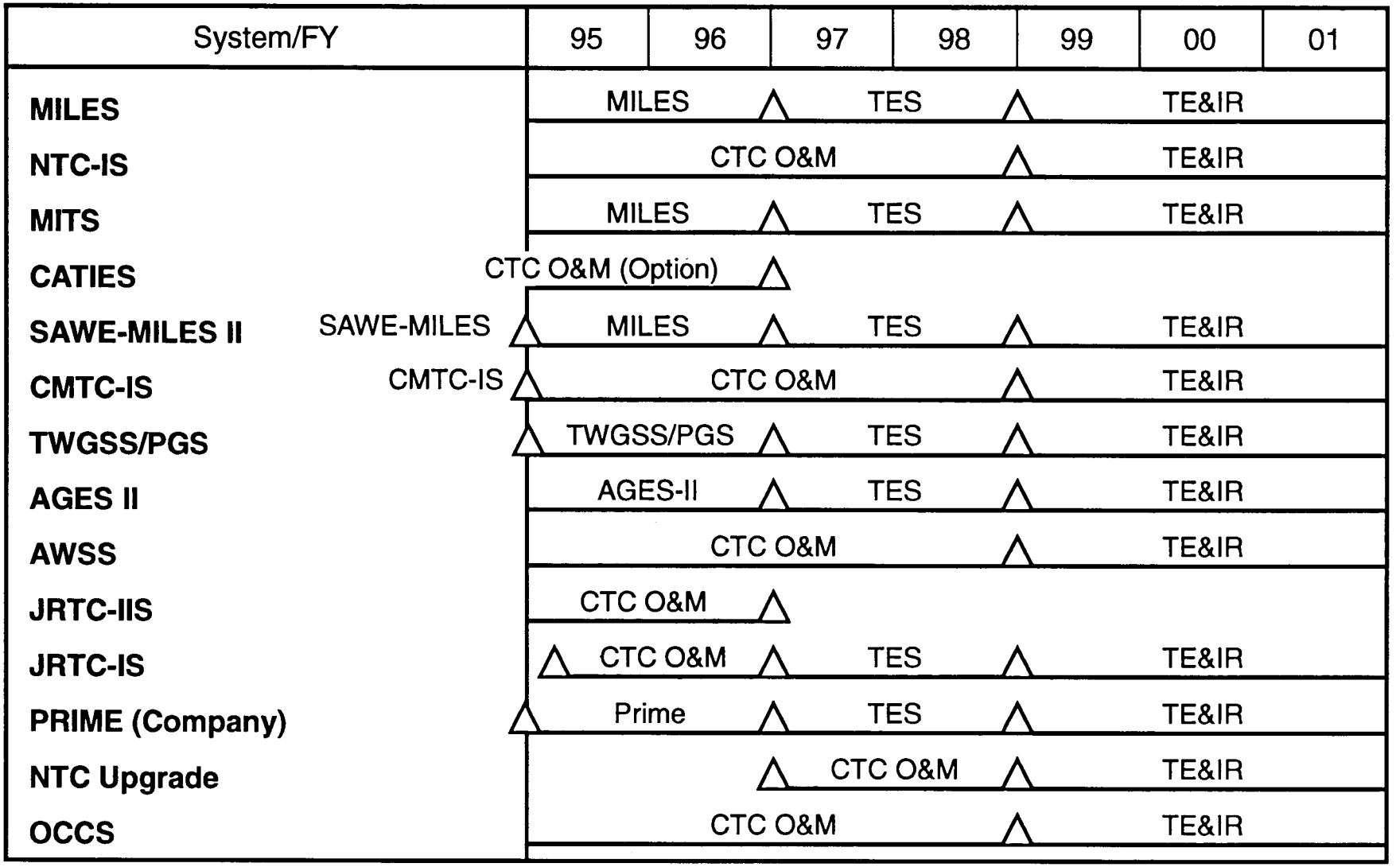


All Army training devices, simulators, and simulations (TDSS) supported by STRICOM fall under one of the following umbrella contracts:

- Tactical Engagement/Instrumentation Ranges (TE/IR)
- Battlefield Simulation/SIGINT/EW (BS/EW)
- Gunnery/Maintenance (G/M)
- Battlefield Mobility/Target Acquisition (BM/TA)

The charts on the next four pages show when each TDSS is to be fielded, the period of support by the prime contractor, and the timeframe for incorporation into an umbrella contract.

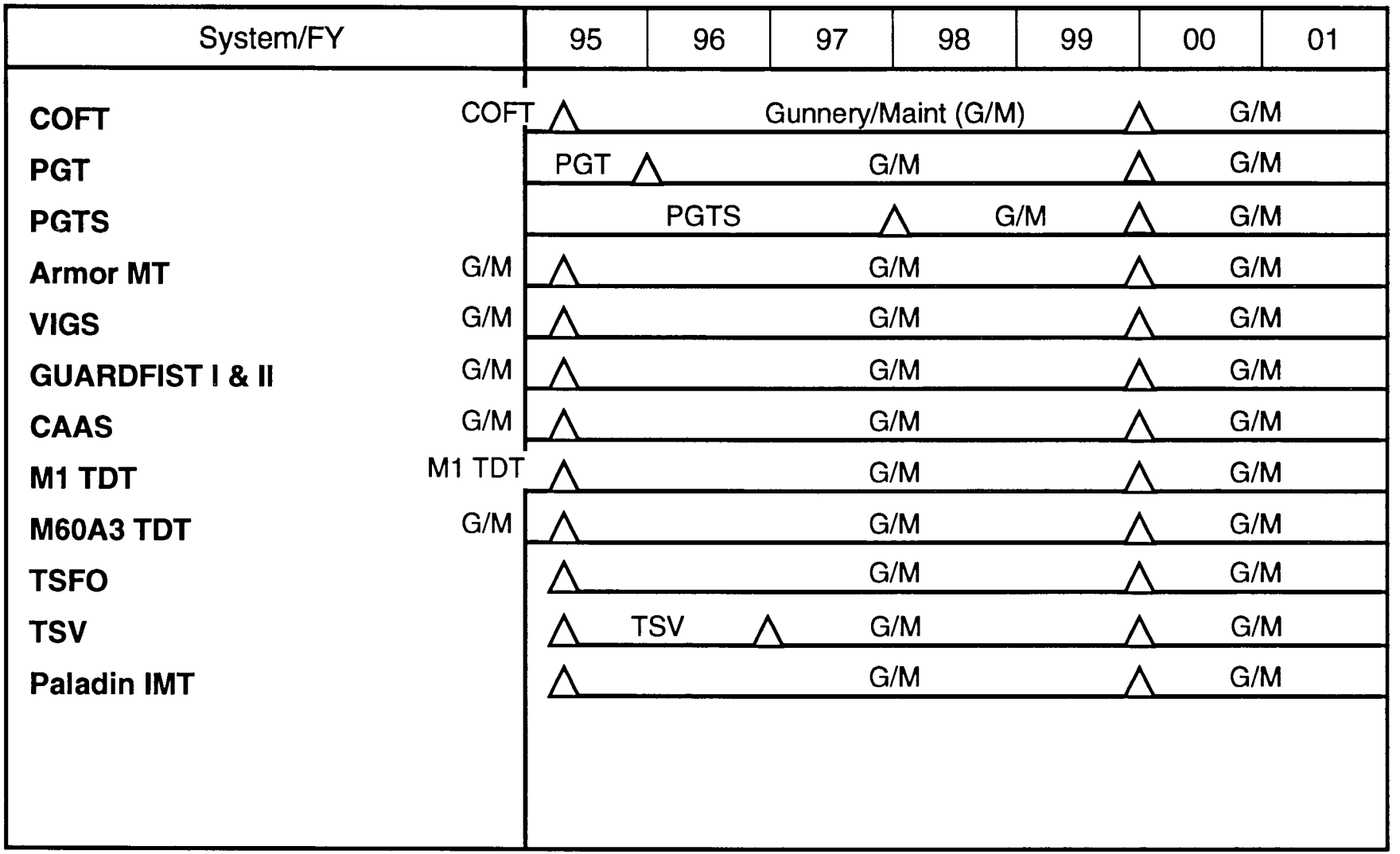
Plan for Life Cycle Contractor Support Tactical Engagement/Instrumentation Ranges (TE&IR)



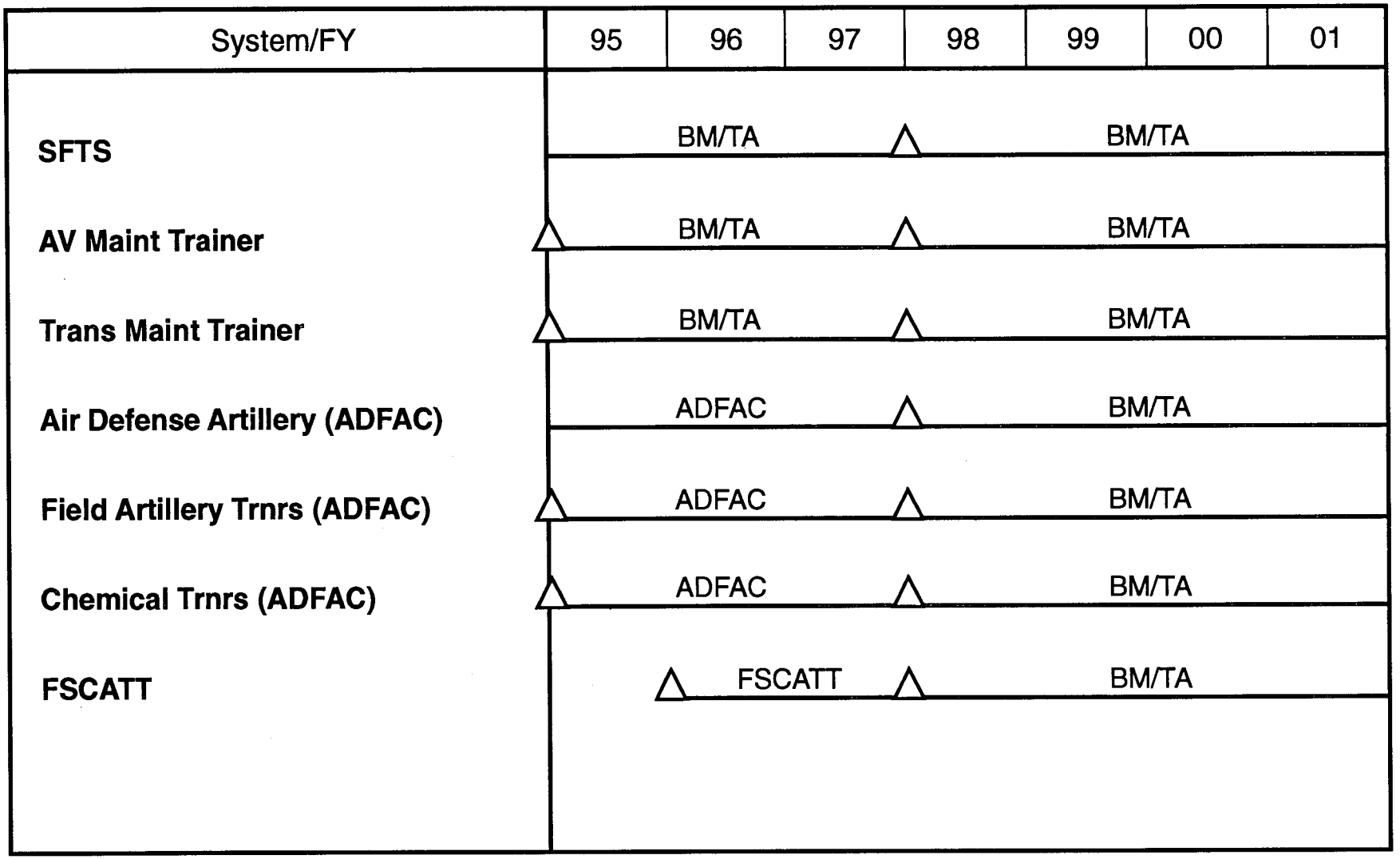
Plan for Life Cycle Contractor Support
Battlefield Simulation/SIGINT EW

System/FY	95	96	97	98	99	00	01
SIMNET	SIMNET	BS/EW		BS/EW		BS/EW	
ARTBASS	SIGINT EW		BS/EW		BS/EW		
BBS	BS/EW		BS/EW		BS/EW		
CBS	BS/EW		BS/EW		BS/EW		
SEOS	BS/EW		BS/EW		BS/EW		
MMT	BS/EW		BS/EW		BS/EW		
BMMT	BS/EW		BS/EW		BS/EW		
BEMT	BS/EW		BS/EW		BS/EW		
TAMT	BS/EW		BS/EW		BS/EW		
CSSTSS	CSSTSS		BS/EW		BS/EW		
G2 Work Station	BS/EW		BS/EW		BS/EW		
JSTARS	BS/EW		BS/EW		BS/EW		
GIITS	BS/EW		BS/EW		BS/EW		
JANUS	BS/EW		BS/EW		BS/EW		
Guardrail Mnt Trnr	BS/EW		BS/EW		BS/EW		
TQT/MT			BS/EW		BS/EW		
IEWTPT			BS/EW		BS/EW		
DSCS			BS/EW		BS/EW		

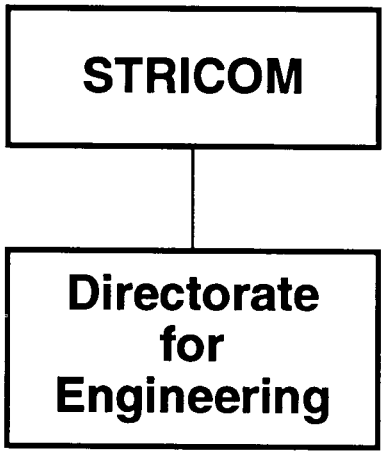
Plan for Contractor Logistics Support Gunnery/Maintenance Trainers



Plan for Life Cycle Contractor Support
Battle Mobility/Target Acquisition (BM/TA)



Technology Base



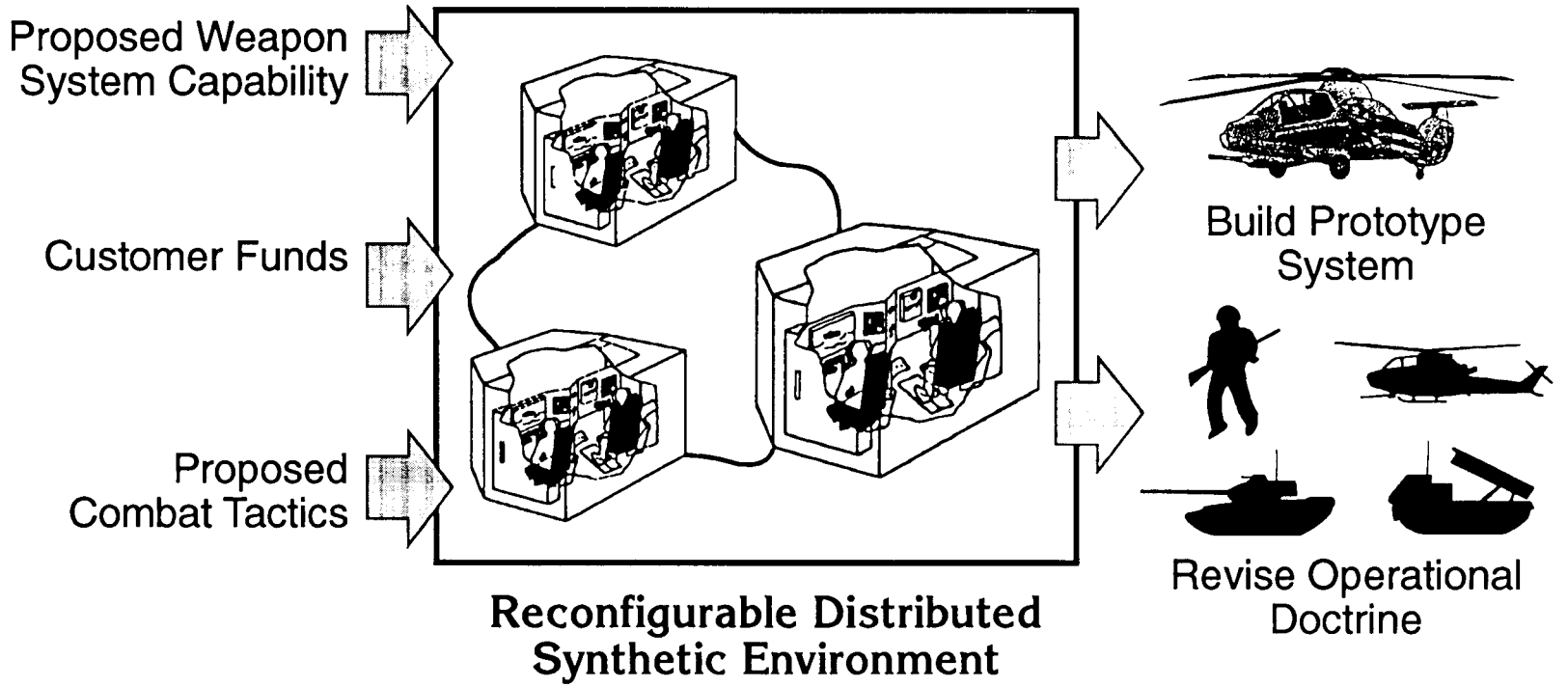
STRICOM technology base is managed by the Directorate for Engineering.

Simulators, Simulation and Modeling Technology Base

The primary focus of STRICOM's Technology Base is to provide and demonstrate enabling technologies for advancing Distributed Interactive Simulation (DIS) networking capabilities and synthetic representation of the battlefield needed to support virtual prototyping and training in the era of reduced funding. The Battlefield Distributed Simulation – Developmental (BDS-D) project will provide virtual representation of a lethal combined arms environment with the warfighter-in-the-loop that closed-form analysis cannot provide. The environment permits new system concepts, tactics and doctrine and test requirements to be evaluated with a warfighter-in-the-loop in a combined arms battlefield throughout the acquisition life cycle at a reduced cost and time than the traditional approach. The research being conducted includes Semi-Automated Forces (SAFOR); dynamic terrain and data base development for networking; micro-terrain development and speech recognition/speech synthesis into SAFOR to create the desired immersive effect of the individual soldier. Arrival of this sophisticated technology, equipment and complex relations to each other, makes this effort critical to overall success of Army acquisition and training requirements.

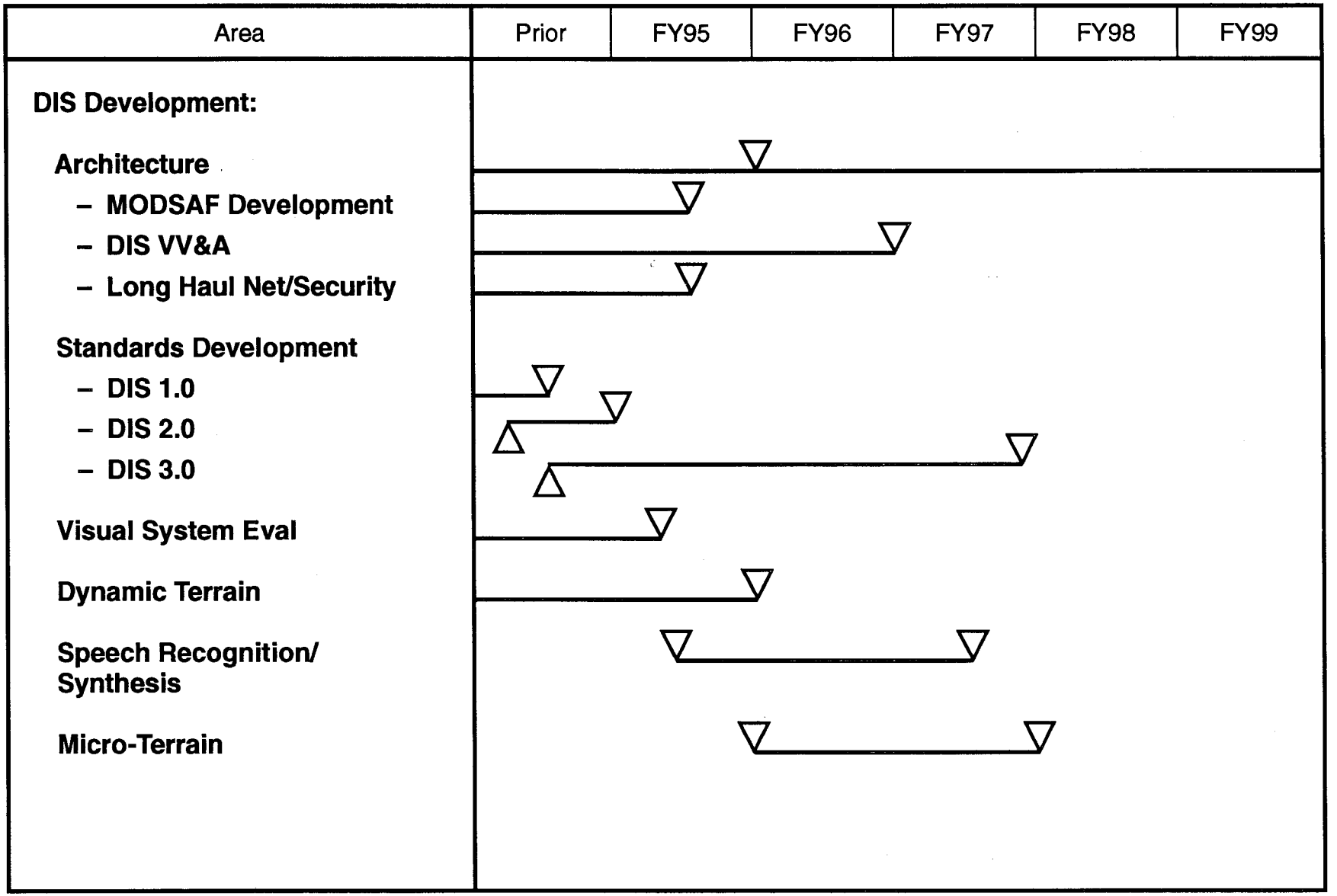
Battlefield Distributed Simulation Developmental (BDS-D) Program

The Army's networked simulation testbed, serving as a laboratory showcase used to evaluate new design concepts, with the warfighter-in-the-loop.



Simulate BEFORE AND DURING ... Building, Testing, Buying, Fighting

Tech Base Experiments on the BDS-D Schedule



Examples of Simulators, Simulations and Modeling Technology Base

- **Networked Battlefield Distributed Simulation Technology** – Supporting interactive networked simulators to train combined arms forces and provide for test and evaluation of future weapons systems, tactics and doctrine. Provide simulation models to train units in a variety of actions-in-short-of-war missions, to include disaster relief, deployment, redeployment, peacekeeping, non-combatant evacuation operations, U.N. security force duty and civil emergencies.

- **Speech Recognition and Speech Synthesis Technology** – Critical to the human-computer interaction in DIS is the integration of speech recognition and speech synthesis capabilities into semi-automated forces. Required capabilities include large vocabulary with high perplexity, continuous speech, spontaneous speech, speaker independent recognition, robustness to background noise, and real-time. This technology is required to be utilized in numerous applications such as Distributed Interactive Simulation (BDS-D), WARSIM 2000, and Combined Arms Tactical Trainer (CATT)/Close Combat Tactical Trainer (CCTT).

- **Computer Generated Forces** – Developing and demonstrating methods and computational approaches to efficiently portray and reconfigure critical behaviors and essential characteristics of intelligent computer generated forces for distributed interactive simulations. Developing and demonstrating extension to battlefield functionality of Semi Automated Forces (SAFOR).

Examples of Simulators, Simulations and Modeling Technology Base (Cont)

- **General Linkage of Simulations/Simulators** – Developing and demonstrating capabilities to link simulation with other simulations and simulators to allow individuals and combat teams/units to prepare for warfighting by participating in simulated combined arms battles.

- **Dismounted Infantry Integration** – Create a multi-sensory realtime simulation of the battlefield that immerses the individual soldier in three-dimensional geographical space utilizing virtual reality (head-mounted stereoscopic displays, 3-D audio systems, position tracking devices, and innovative input devices such as instrumented gloves). Networked virtual reality devices will integrate individual soldiers into distributed interactive simulation synthetic environments. In addition, enhancement of the representation of the individual soldier in the SAFOR is required.

- **Combat Training Centers/Tactical Engagement Simulation (CTC/TES) Technology** – Investigating potential solutions to meet future TES requirements for the next generation of weapon systems with extended engagement ranges, adverse weather operations and smart munitions.

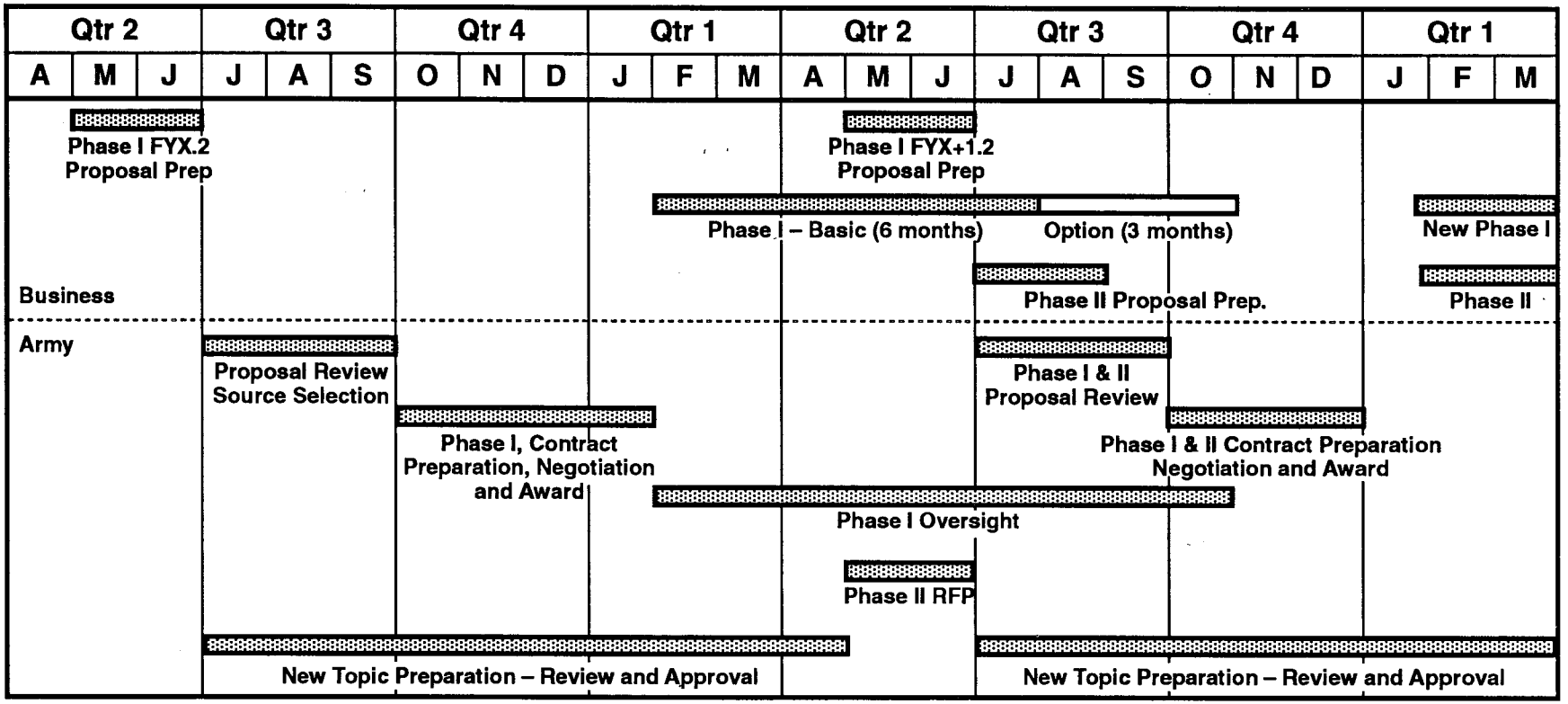
Small Business Innovation Research (SBIR) Program

SBIR is a congressionally mandated program directed toward small firms with strong research and development (R&D) capabilities in science and engineering for the purpose of proposing solutions to needs identified by the various federal government agencies. The Army expresses their needs through topic descriptions which are thrusted toward resolving technical issues from the Department of the Army's 10 science and technology (S&T) areas. Army topics, grouped by S&T area, appear in the Department of Defense (DoD) FY9X.2 SBIR Program solicitation which normally opens in the spring time frame. See the Army SBIR Review Cycle chart for detail process information. The objectives of the SBIR program are to stimulate technological innovation in the private sector, to increase the role of small business in meeting the R&D needs of DoD, to emphasize and increase the transfer of DoD sponsored R&D into the private sector, and to improve participation of women-owned small businesses and socially and economically disadvantaged small business firms in the program.

Programatically, SBIR includes 3 phases. Phases I and II being SBIR funded phases while Phase III funding must come from other sources. Army Phase I's allow the small business to propose an option task, not to exceed $30,000 dollars, in the Phase I proposal. The option task is intended to allow Phase II preparatory work to be initiated. A comprehensive demonstration of a fleshed-out concept/design is the objective of Phase II. A Phase II's period of performance is generally 24 months and results in the delivery of hardware, software, and technical data. Phase III is the culmination of a successful SBIR project and will result in the delivery of end items that satisfy a DoD requirement or in the transfer of technology into the commercial sector or both.

Historically, STRICOM's topics have been Research or Exploratory in nature, directed toward the resolution of technical issues within the Sensors and Information Processing, and the High Performance Computing and Simulation S&T areas. More specifically, STRICOM topics tend to address problems in the following four training technology areas: (1) distributed interactive simulation (DIS), (2) tactical engagement simulation (TES), (3) virtual environments (VE), and (4) training effectiveness (TE).

Army SBIR Review Cycle
FY93-FY95



In DoD's FY95.2 SBIR Solicitation which opens Spring 1995 and closes July 1995, STRICOM has two topics both appearing in High Performance Computing and Simulation S&T area of the Army's part of the solicitation. Any qualified small business firm interested in participating in the program should obtain a copy of the solicitation, review all relevant topic areas, and prepare and submit their proposal(s) in accordance with the instructions contained in the solicitation. A copy of the solicitation can be obtained from the Defense Technical Information Center (DTIC) located in Alexandria, Virginia by calling their toll free (800) 225-3842 or commercial (703) 274-6902 help numbers. In addition, offerors are strongly urged to obtain the Technical Information Package prepared by DTIC for the specific topic area of interest. These packages are intended to help a potential offeror prepare the technical proposal and will contain additional technical information about the topic, if available and releasable. The SBIR Program does not permit technical discussions between topic authors and potential offerors before the close of the solicitation. Questions about the SBIR Program should be directed to STRICOM's SBIR point of contact, Mr. Admiral S. Piper at (407) 380-4287.

Small Business Technology Transfer (STTR) Program

The Small Business Research and Development Enhancement Act of 1992 created a three year pilot program called Small Business Technology Transfer. Under this pilot program awards are made to small business concerns for cooperative research and development, conducted jointly by a small business and a research institute, through a uniform process that has three phases. STTR, although modelled substantially on the SBIR program, is a separate program that is separately financed.

The STTR Program is designed to provide a strong incentive for small companies and researchers at research institution, i.e., non-profit institutes, contractor-operated federally funded research and development centers, and universities, to work together to move ideas from the laboratory to the marketplace, to foster high-tech economic development, and to advance U.S. economic competitiveness.

The STTR Program consists of three phases. Phase I is to determine the scientific, technical and commercial merit and feasibility of the proposed cooperative effort and the quality of performance of the small business concern with a relatively small investment. Phase I awards are typically a one-half person-year effort over a period generally not to exceed 12 months and up to $100,000. Phase II awards will be made to firms on the basis of the results of Phase I and the scientific and technical merit and the commercial potential of the Phase I effort. Phase II awards will typically cover a 2 to 5 person-years of effort over a period generally not to exceed 24 months and up to $500,000. In Phase III the small business is expected to use non-federal capital to pursue private sector applications.

Although STTR is currently a pilot program it is expected that an annual solicitation cycle very similar to the SBIR solicitation cycle will be established. The first STTR solicitation closed on 01 APR 94. Several of STRICOM sponsored technical issues were included in the High Performance Computing and Simulation Topic Area. At this time it is unclear how many, if any, contracts will be awarded. Information about future STTR solicitations can be obtained by contacting the Defence Technical Information Center in Alexandria, VA at (800) 225-3842 or by contacting the STRICOM SBIR POC.

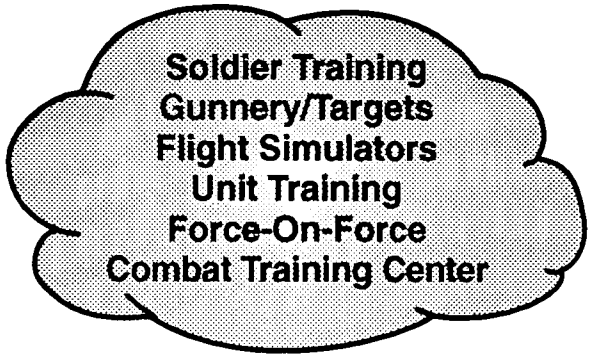
PROJECT MANAGER
TRAINING DEVICES
(PM TRADE)

U.S. ARMY
MATERIEL COMMAND
PROJECT MANAGER
TRAINING DEVICES

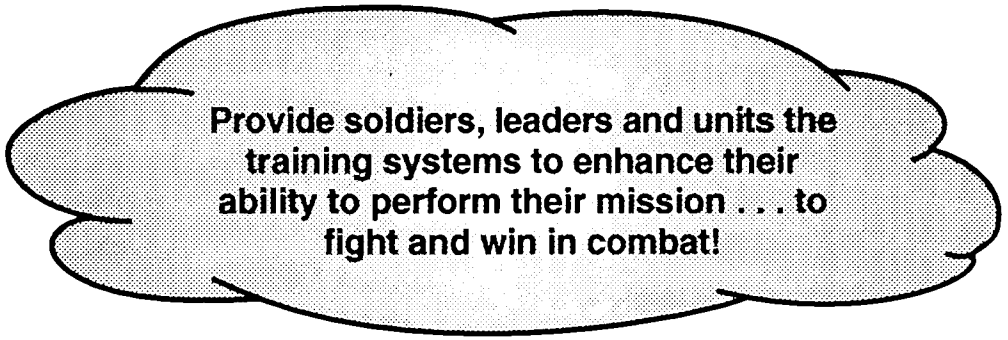
Colonel Delloyd Voorhees, Jr.

SECTION 2

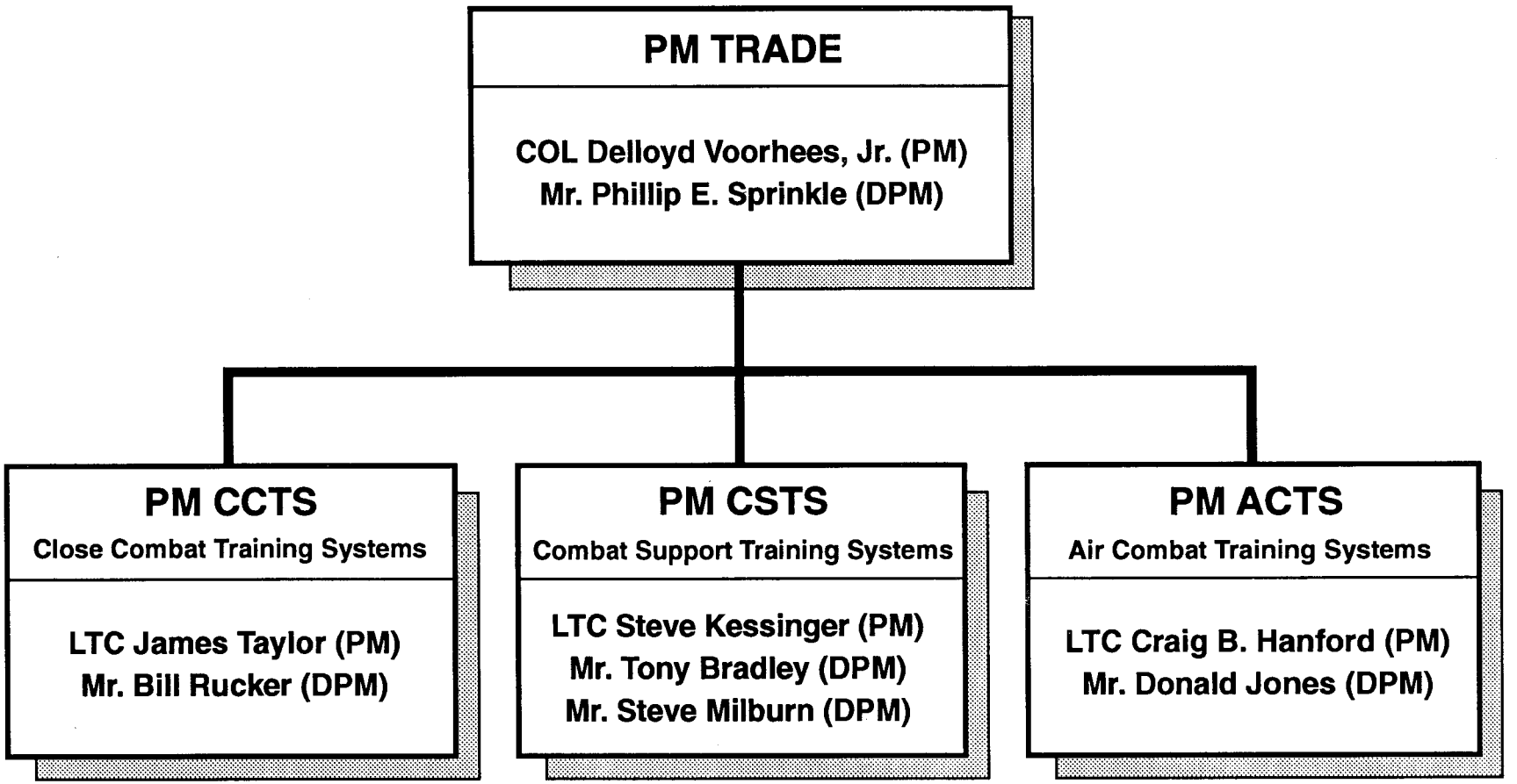
PM TRADE
Mission



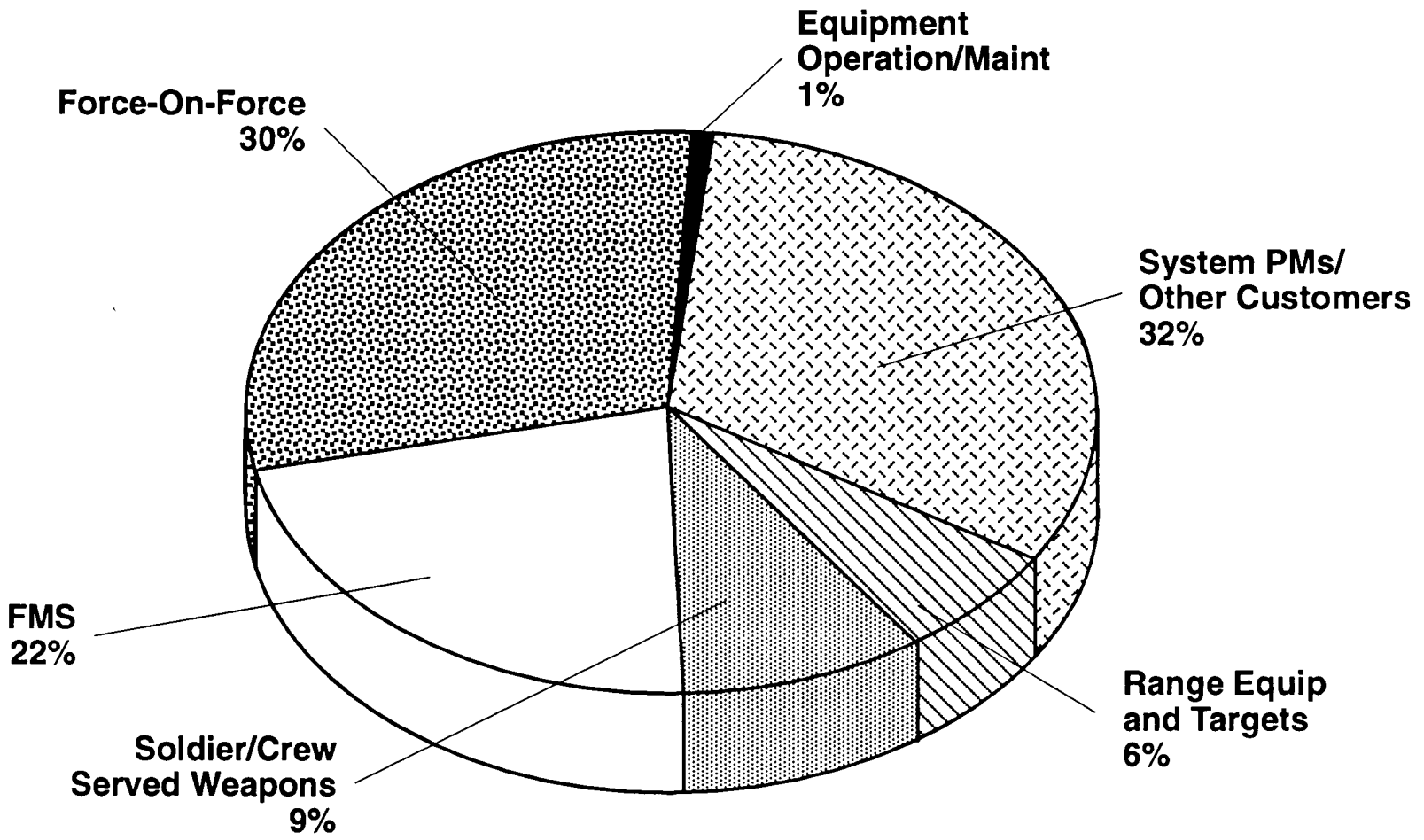
- Develop and field assigned system and non-system training devices and simulators and synthetic flight training systems for the U.S. Army
- AMC executive agent for Combat Training Center instrumentation and system acquisition
- Direct the activities of three assigned product managers
- Acquire assigned training devices and simulators for allies . . . foreign military sales



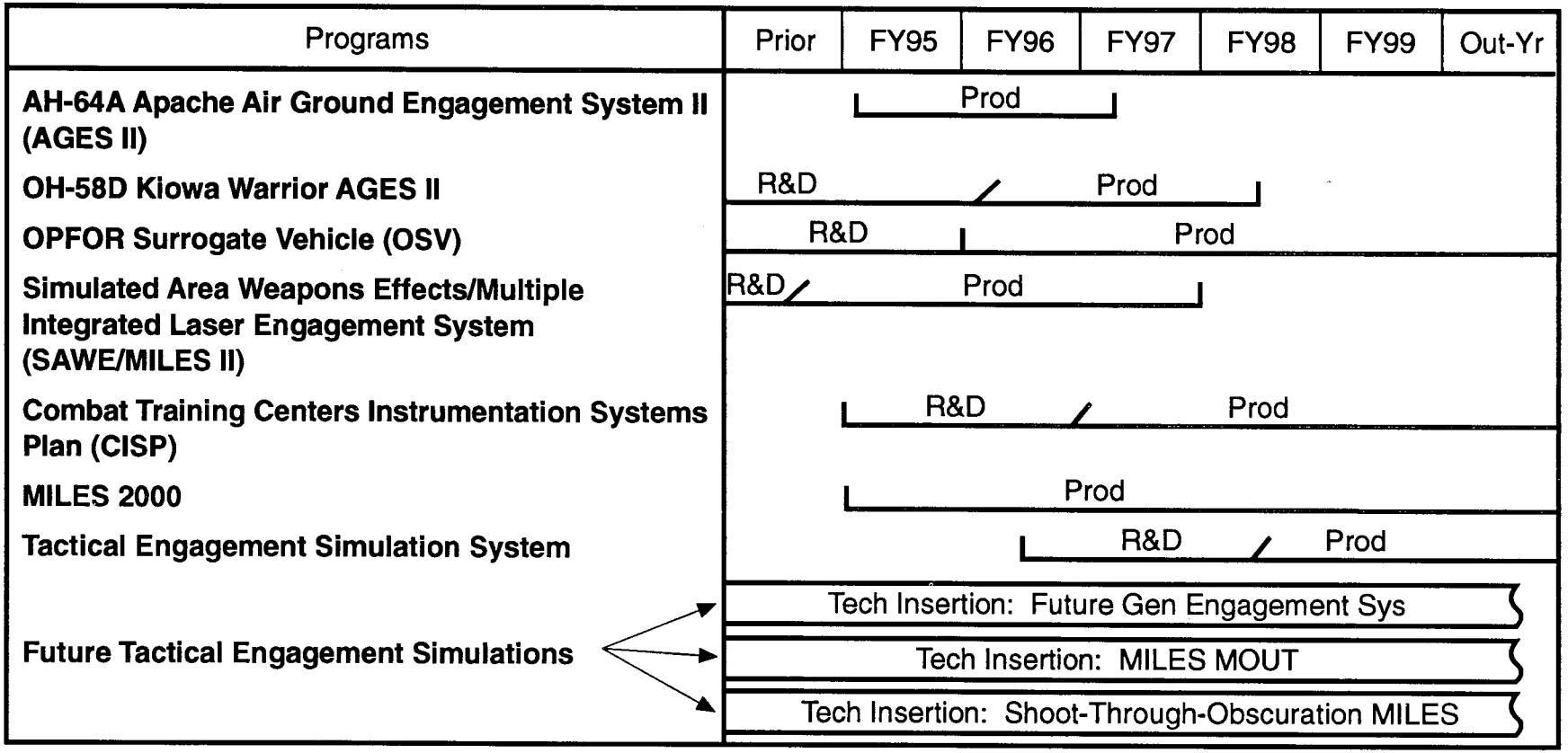
PM TRADE Organization



Project Manager Training Devices
Relative Investment FY95-FY99



Force-on-Force Training



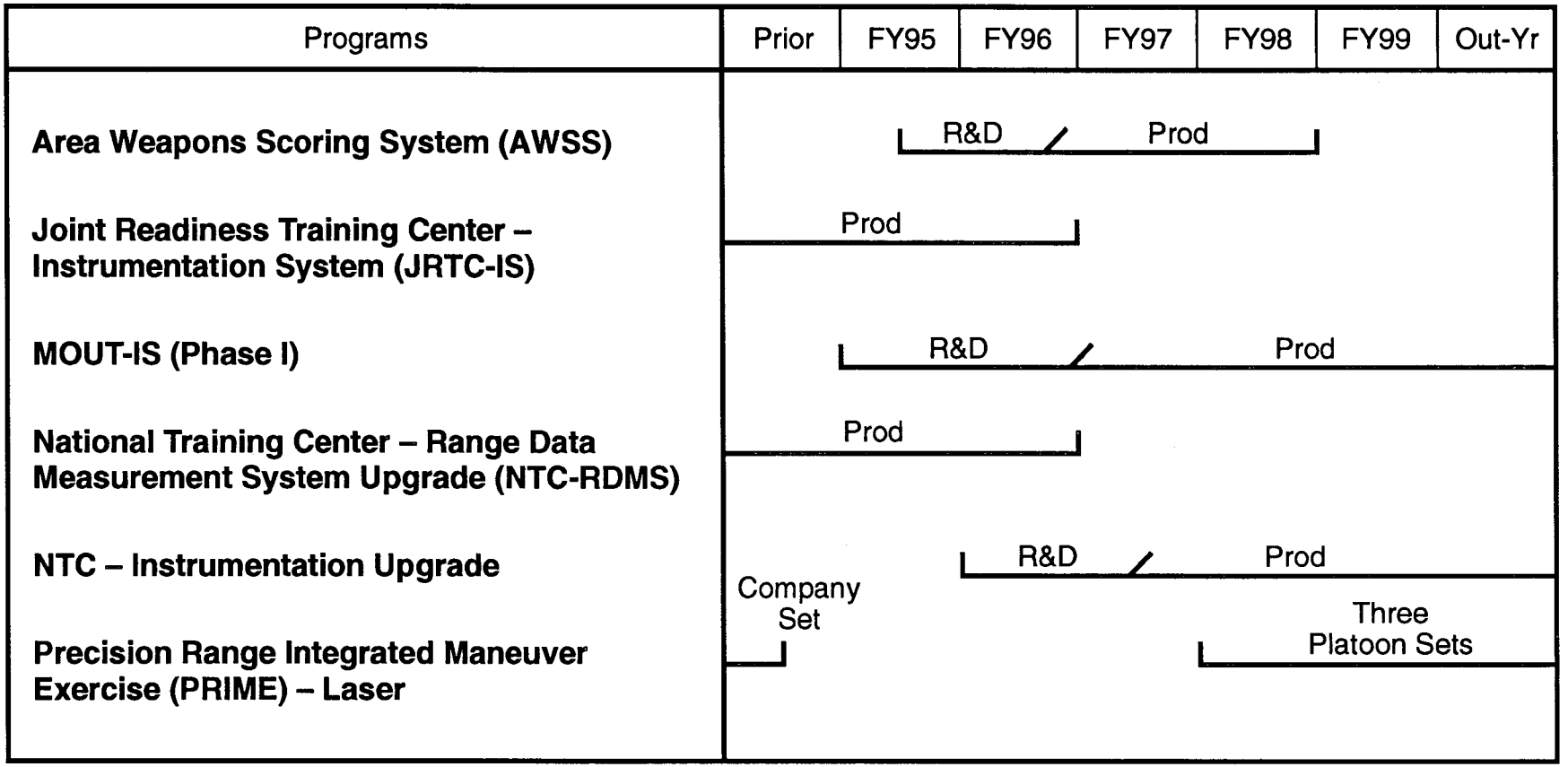
The Force-on-Force engagement training family of devices provide commanders and trainers with the means to conduct realistic combined arms and field training exercises. The Simulated Area Weapons Effects/Multiple Integrated Laser Engagement System (SAWE/MILES II) devices will simulate the effects of almost all of the Army's Indirect fire weapons, plus area effects of enemy land mines, artillery fires, and NBC agents, plus a block upgrade to the MILES system initially fielded in the 1970's. Initial production was completed in FY93, with a follow-on production effort to be accomplished by a competitive procurement. The ability of these systems to accurately assess casualties provides opposing force commanders and their troops with a near real-time determination of their individual and unit fighting skills. Future efforts will examine approaches to provide Force-on-Force engagement capability for operation during obscured conditions and for Military Operations in Urban Terrain (MOUT). MILES 2000 is a program to replace basic MILES devices at home station with state-of-the-art laser-based Tactical Engagement Simulation devices.

Soldier/Crew Served Weapons Training

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Fire Support Combined Arms Tactical Trainer (FSCATT)	R&D → Prod						
Guard Armory Device Armor (GUARDFIST I)	Prod						
Guard Armory Device Artillery (GUARDFIST II)	Prod						
Precision Gunnery Training System (PGTS) (DRAGON/TOW)	Prod						
Thru-the-Sight-Video (TSV)	Prod						
Tank Weapons Gunnery Simulation System/Precision Gunnery System (TWGSS/PGS)	Prod						
	Systems Modernization →						
	Tech Insertions: Embedded Training; Reusable, Transportable, Reconfigurable, Sim Designs						

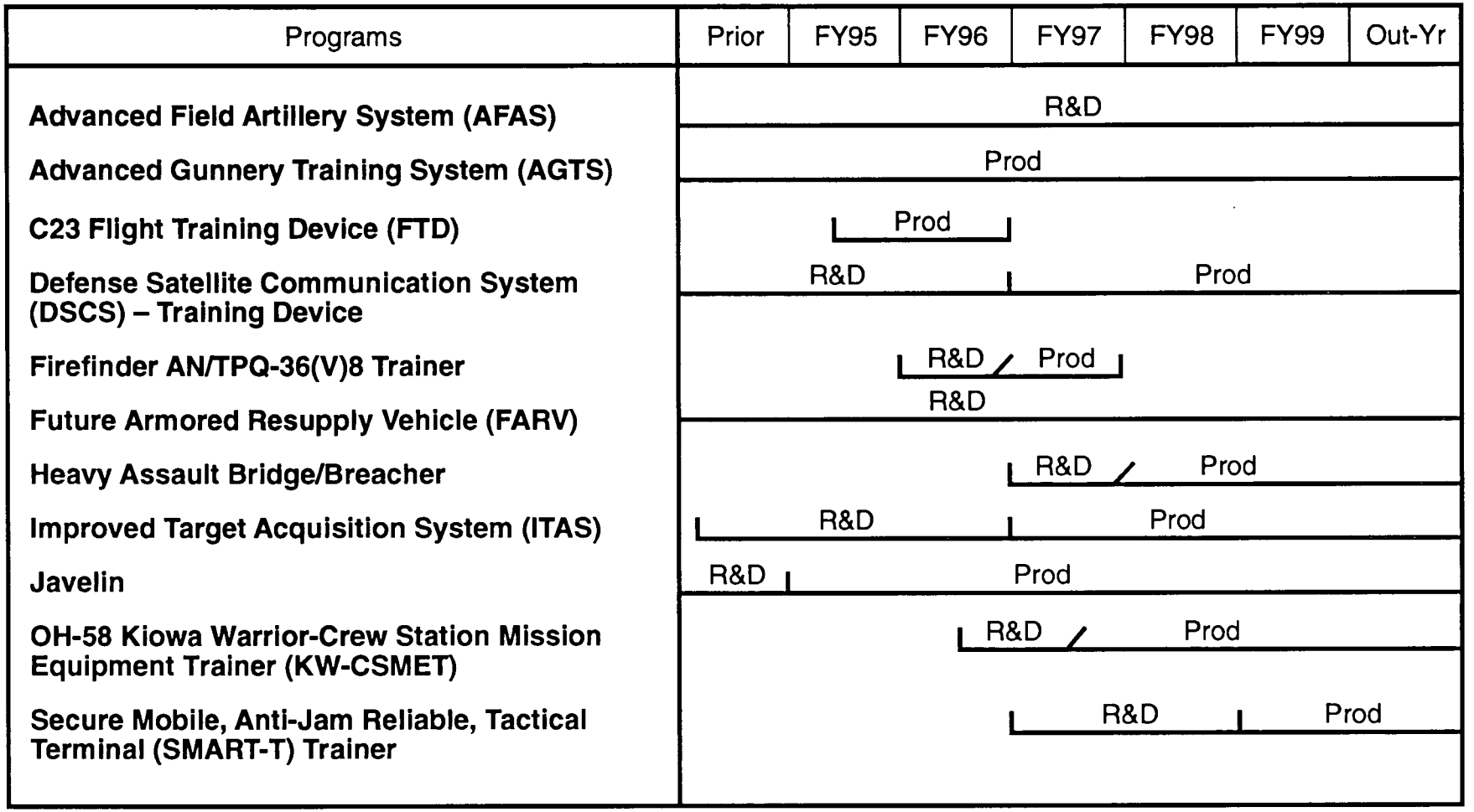
Current Soldier/Crew Served Weapons Training requirements will aid in meeting the training needs of both active Army and Army National Guard (ARNG) units. The Tank Weapons Gunnery Simulation Systems (TWGSS) will integrate mature, eye-safe laser technology to develop an appended precision gunnery training system for armor vehicles. FSCATT (Phase I) will be a "system of systems" that will integrate the training of the field artillery gunnery team to allow the forward observer, fire direction center and firing battery personnel to train either independently of simultaneously in a closed loop environment without the use of live ammunition.

Range Equipment and Targets for Training



The Army is resolute in developing range and target training equipment systems that conserve manpower in their operation, realistic in the threat arrays they simulate, and capable of quickly providing performance results to both trainers and trainees. Development efforts focus on providing durable, low cost, lightweight material for the manufacture of reusable targets/arrays for infantry, armor, and aviation unit weapons training. Range safety constraints in prior years limited realism in fire and maneuver training.

PM TRADE Support to System PMs



System devices cross a full spectrum from individual/operator trainers to collective and institutional trainers. System devices depicted represent those in which PM TRADE currently has an active role. In some cases, procurement of the devices will be through PM TRADE, while in other instances, acquisition of the devices will be accomplished by the system PM.

Equipment Operator/Maintenance Training

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Abrams M1A2 and Bradley M2/M3 (A3) Maintenance Trainers		Prod					
CH-47D Composite Maintenance Trainer Upgrade		Prod					
Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT)			R&D			Prod	
UH-60 A/L Electrical System Panel Trainer			Prod				
UH-60 Automatic Flight Control System Trainer/BEAT			Prod				

The complexity of new equipment requires cost-effective, innovative approaches that provide an effective method of learning/practicing skills. This family of training devices focuses on equipment operator/individual maintenance training.

Project Manager for Training Devices (PM TRADE)
Narrative Descriptions

Abrams M1A2 and M2A3 Maintenance Trainers

The M1A2 and M2A3 family of maintenance trainers/simulators will be used to train critical unit and direct/general support tasks required by the actual system. The maintenance trainers will be used for skill development to include system operation, fault diagnosis, troubleshooting, adjustments, removal/replacement, and repair tasks. The type of devices include a Hands-on-Trainer (HOT), a Diagnostic/Troubleshooting (D/T) trainer, and a direct support simulator. (MAJ Groller, (407) 380-4475, AMCPM-CCTS)

Advanced Field Artillery System (AFAS)/Future Armored Resupply Vehicle (FARV)

Current concepts include: embedded training for unit sustainment of both operator and maintainer skills; embedded Tactical Engagement Simulation (TES) capability for Force-on-Force training; and stand alone and networked training devices for the institution. PM TRADE provides a total training support program in the context of integrated product teams for the AFAS/FARV program. AFAS is the next generation of 155 mm howitzer and FARV is its companion resupply vehicle. (MAJ Drummond, (407) 380-4314, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Advanced Gunnery Training System (AGTS)

The AGTS will train M1A2, M1A1, M2/M3A3 and Armored Gun System gunners and commanders in crew section and platoon settings. The system will train both precision and degraded gunnery skills. Training includes initial qualification and sustainment level at a variety of sites including institutions (Fort Knox and Fort Benning), battalion/ squadron level units and reserve/guard sites. (Mr. Finkelstein, (407) 381-8792, AMCPM-CCTS)

AH-64A+ Apache/OH-58D Kiowa Warrior Air Ground Engagement System II (AGES II)

This system incorporates MILES on the AH-64A+ Apache and the OH-58D Kiowa Warrior. System will allow these aircraft to participate in force-on-force training exercises at the combat training centers. Weapons simulated include Hellfire, rockets and 30mm/50mm cannons. Systems also include eye-safe laser rangefinders and simulate effects of aircraft survivability equipment employment. (Mr. Blanding/Mr. LaBalbo, (407) 380-4316/4317, AMCPM-ACTS)

Air Ground Engagement System II (AGES II)

This system incorporates MILES on the AH-64A Apache and the OH-58D Kiowa Warrior. System will allow these aircraft to participate in force-on-force training exercises at the combat training centers. Weapons simulated include Hellfire, rockets and 30 mm/50 mm cannons. Systems also include eye-safe laser rangefinders and simulate effects of aircraft survivability equipment employment. (Mr. Blanding/Mr. LaBalbo, (407) 380-4316/4317, AMCPM-ACTS).

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Area Weapons Scoring System (AWSS)

The area weapons scoring system (AWSS) is an integrated collection of computer controlled sensors used to score live-fire helicopter gunnery exercises at Army aviation gunnery ranges. The AWSS provides a means to objectively score helicopter gunnery engagements and consequently provides a foundation for a standardized gunnery training program. (MAJ Fruge, (407) 380-4327, AMCPM-ACTS)

C-23 (Sherpa) Flight Training Device (FTD)

The C-23 FTD will support initial and sustainment training of individual, crew, certain emergency procedures, and mission training capabilities that are currently taught in the aircraft. The flight training device will focus on training crew skills required to conduct combat and peacetime operations, reinforcing thought processes required to react to emergencies, failures and changing situations, and finally aircrew cockpit coordination training. Additionally, the C-23 Flight Training Device will be used for portions of annual standardization training and evaluation flights. (MAJ Eady, (407) 380-4343, AMCPM-ACTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

CH-47D Composite Maintenance Trainer Upgrade

The CH-47D Composite Maintenance Training Upgrade will upgrade an existing trainer to current configuration requirements. The trainer trains troubleshooting of hydraulic and electrical systems. (Mr. Binkewicz, (407) 380-4437, AMCPM-ACTS)

Combat Training Center-Instrumentation System Brigade Operations (CMTC-IS BDE OPS)

CMTC-IS Brigade Operations is a series of engineering efforts and software packages that will enhance the capabilities of the CMTC-IS to support automated instrumented After Action Reviews (AARs) to include all participants in a brigade size exercise. CMTC Brigade Ops will support long-range, short-range and near-term exercise planning and scenario development activities of CMTC Operations Group (OPS GRP) personnel. These activities take place concurrently with the execution of the present exercise. It will also support instrumentation installation, system initialization, and system readiness verification activities to prepare the CMTC-IS to support the exercise. CMTC Brigade Ops initialization, and configuration, minimizing areas of manual entries. It will support activities to collect, manage and analyze voice, video and digital training performance data; control the exercise of role playing participants and communications with field components and observer/controller (O/C) personnel; and monitor mission capable status of the CMTC-IS. (Mr. Pat Ralph, (407) 381-8879, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Combat Training Center Instrumentation System Plan (CISP)

A program for the continued improvement of the CTC Master Plan (CTCMP). The CISP will provide for requirements definitions, prioritization of systems integration, resource allocation, system integration of new capabilities and implementation of training enhancements at the maneuver CTCs. (LTC Kessinger, (407) 380-8181, AMCPM-CSTS)

Defense Satellite Communication System – Training Devices (DSCS-TD)

DSCS-TD consists of training devices that support the training of the generic principles of satellite communications terminals that are used with the four major terminals to train MOS 29Y. Devices will be used to prepare personnel in the actual systems and subsystems used for training to maximize hands-on training and minimize the use of actual systems, subsystems, and components. Devices use a combination of interactive workstations, part-task trainers and full system simulators. (Mr. Fields, (407) 380-8378, AMCPM-CSTS)

Firefinder AN/TPQ-36(V)8 Trainer

The Firefinder AN/TPQ-36(V)8 trainer will provide the capability to train operations and maintenance for mortar/artillery locating radar systems in a classroom environment. (Mr. Wakefield, (407) 380-4751, AMCPM-CSTS)

FSCATT, Phase I

The FSCATT will provide initial and sustainment training for the entire gunnery team. It will integrate tactical equipment and simulated howitzer devices in a closed loop network and create a battery-level command and control tactical trainer. On July 30, 1993 FSCATT was designated a Defense Acquisition Pilot Program which will incorporate procurement initiatives similar to commercial industry. (MAJ Hicks, (407) 381-8705, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

GUARDFIST I

GUARDFIST I is a tank appended full crew interactive training device that will be used by the Reserve Components for collective tank crew training in the M1 tank (was M60A3). During training, the tank will have all vehicle power disconnected and all turret hydraulic pressure will be removed. Realistic background scenes and a variety of fixed and moving targets will be displayed on video monitors to the commander, gunner and driver. With random target generation based upon a structured exercise scenario constraints extracted from FM 17-12, and video displays mounted on the tank, the device will provide simulated 360 degree movement while eliminating exercise memorization. Additionally, offensive and defensive target engagements with simulated tank component malfunctions will increasingly challenge the crew as they progress through the six levels of training exercises. Audio cues (engine speed, transmission shifting, weapons firing, weapon storage door movement, etc.) will be provided through an external speaker representing inputs to the crew that could require their appropriate reactions. Another unique feature of this device is that an Instructor/Operator is not required to conduct normal training operations. This feature will reduce manpower impacts while further reinforcing the tank commander's responsibilities as primary trainer for his crew. The results of all exercises can be stored either in computer memory or in hard copy format providing the Reserve Component chain-of-command a significant tool to better sustain 19K skills. (MAJ Koufas, (407) 380-4246, AMCPM-CCTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Improved Target Acquisition System (ITAS)

ITAS is a tactical improvement to the TOW missile sight. ITAS will provide for automatic target tracking, laser range finding, increased target recognition ranges, and Embedded Training. ITAS will be used on ground mount and HMMWV TOW missile systems. Training devices for ITAS will be procured via a modification to the Precision Gunnery Training System (PGTS). This modification is known as ITAS PGTS or I-PGTS. I-PGTS will account for the ITAS improvements in the tactical system as simulated by the PGTS training device. I-PGTS will provide for Force-on-Force training, outdoor Precision Gunnery training, and indoor Gunnery Training. Current funding levels support only the Force-on-Force portion of I-PGTS. The outdoor Precision Gunnery and indoor Gunnery Trainers will be procured as funding becomes available. (Mr. Sims, (407) 380-4312, AMCPM-CCTS)

Intelligence/Electronic Warfare Tactical Proficiency Trainer (IEWTPT)

The IEWTPT will be a trainer system consisting of three components: a Scenario Generation Facility (SGF), and INTEL asset simulation device (Target Signature Array or TSA), and a controller and netting device (Technical Control Cell or TCC). The TSA will strap-on to or be embedded in various Intelligence collection assets such as Communications Intercept, Surveillance Radars, and Aerial Imagery platforms and will simulate these assets to provide a realistic training simulation to the operator. This simulation will allow the operator to participate in multi-echelon training in a CPX environment with command & staff elements. (MAJ Pownall, (407) 380-4313, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Javelin

The Javelin is a fire and forget system replacing the wire guided Dragon as the Army and Marine medium anti-tank missile. There are three Training Devices being developed concurrent with development of the tactical system. The Field Tactical Trainer (FTT) is a MILES based force-on-force trainer that is used with the tactical Command Launch Unit (CLU). The Basic Skills Trainer (BST) simulates the complete tactical engagement sequence using computer generated images to teach tactical and technical gunnery skills. The Missile Simulation Round (MSR) is a three dimensional full size replica, nonoperational mock-up of the Javelin tactical round. (POC: MAJ Jones, (407) 380-4366, AMCPM-CCTSC)

JRTC MOUT-Instrumentation (Phase I)

This project will develop and field an instrumentation system to satisfy a unique requirement to support Military Operations in Urban Terrain (MOUT) assessment at the Joint Readiness Training Center (JRTC), Fort Polk, LA. The system is required to realistically duplicate a MOUT environment. System capabilities include: conduct of live fire exercises, assessment of company through team level operations, monitor individual movements throughout the complex, capture real-time data (After Action Reviews), control targets from remote location with reaction time/hit/miss reporting capability, and provide centralized visual observation and control of facilities. (Ms. Randy Kahl, (407) 380-4335, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

National Training Center – Range Data Measurement System Upgrade (NTC-RDMS)

This project will modernize the NTC position location and event recording system. This upgrade will exploit the inherent capabilities of new systems being fielded to the NTC. Further, this effort will increase the number of instrumented players. (MAJ Mervin, (407) 380-8178, AMCPM-CSTS)

NTC Instrumentation Upgrade

The NTC Instrumentation Upgrade is a concept development project to modernize the entire NTC Instrumentation System, including the RMCS and the Core Instrumentation System. This program, coupled with the RDMS Updrade, will enhance the control of the training exercise, improve after-action reviews, and reduce support costs. (Mr. Milburn, (407) 380-8180, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

OH-58D Kiowa Warrior (KW) Crew Station Mission Equipment Trainer (CSMET)

The OH-58D KW CSMET will train crew members in the operation and employment of the KW mission equipment package. Simulated systems will include the weapon systems, aviation survivability equipment, automatic target handover system, communication and navigation equipment, mast mounted sight, cockpit controls and the pilot display unit. The CSMET design shall be based, to the maximum extent possible, on Government owned software commercially available software and commercially available hardware and will be employed in a "classroom" type environment. (MAJ Gore, (407) 380-4334, AMCPM-ACTS)

Precision Gunnery Training System (PGTS)

PGTS is a system for training TOW and DRAGON gunners. The Gunnery Trainer (indoor) consists of an Instructor Station and a Student Station for the TOW and DRAGON. The indoor system employs video disk imagery of actual threat vehicles and introduces launch obscuration, missile flyout, and burst on target. The Field Tactical Trainer (FTT) is laser based and MILES compatible. A retro-reflector is placed on a target vehicle and the system accounts for actual distance and time of flight. The FTT has also been modified to include employment on the Improved TOW Vehicle (ITV) and an enhanced instructor station which provides thru-sight video. PGTS is currently fielded world wide to both the active and reserve components. (Mr. Sims, (407) 380-4312, AMCPM-CCTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Precision Range Integrated Maneuver Exercise (PRIME)

GENERAL: PRIME instruments Infantry and Armor Company Team vehicles, OPFOR, pop-up targets, and Dismounted Infantry for realistic, controllable, MILES based, force-on-force exercises. It provides controllable shoot-back targets for a free play ervironment and data collection to record crew through company level performance. Sufficient hardware to instrument an OPFOR is available for Force-on-Force exercises. Targets and player systems are linked through telemetry and a GPS network to the Command and Control and AAR facilities which will be in transportable shelters. PRIME incorporates MILES II, Telemetry Network, Global Positioning System (GPS), and Thru Sight Video (TSV) technologies. For After Action Reviews (AARs), it provides audio and video recordings, computer generated statistics, and map graphics printouts. PRIME is a tactical trainer which trains fire and maneuver, command and control, target detection, identification, and engagement. (CPT Guerra, (407) 380-8884, AMCPM-CCTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Secure Mobile Anti-jam Reliable Tactical Terminal (SMART-T)

SMART-T is a tactical MILSTAR terminal. Trainers for the operation and maintenance of this new communications terminal are required. PM MILSTAR and PM TRADE and the U.S. Army Signal Center are working together to develop the training strategy needed to support the fielding of SMART-T. (Mr. Youmans, (407) 381-8717, AMCPM-CSTS)

Simulated Area Weapon Effects (SAWE)/MILES II

SAWE provides the capability to simulate accurately and in real-time, the effects of indirect fire, mines and chemical contamination in force-on-force exercises. Use of Global Positioning System (GPS) technology will provide accurate position location. SAWE and MILES II have been integrated to provide a system capable of both direct fire and area weapons casualty affects. Additionally, MILES II will enhance training by providing new features such as programmable Pk, player identification, time tagged even storage and aspect angle discrimination between front-plank-rear engagements. After competitive development, initial production option will provide SAWE/MILES II to the three Combat Training Centers, replacing CATIES at the National Training Center. (LTC Kiley, (407) 380-4170, AMCPM-CSTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Special Operations Aviation Combat Mission Simulator (SOACMS) Update
The SOACMS simulates the operation of the MH-60K and the MH-47E aircraft. The SOACMS update will incorporate training pertinent aircraft updates in the respective trainers to maintain concurrency with the aircraft. (MAJ Shelton, (407) 380-4323, AMCPM-ACTS)

Tactical Engagement Simulation System (TESS)
This system provides force-on-force training capabilities for the Longbow Apache (LBA) aircraft. TESS will provide a "B" kit that interfaces with the LBA fire control radar and simulates the radar guided and laser guided Hellfire missile, rockets and 30 mm cannon. System also includes an eye-safe laser rangefinder and simulates the effects of aircraft survivability equipment employment. (Mr. Routledge, (407) 380-4330, AMCPM-ACTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

Tank Weapons Gunnery Simulation System (TWGSS) Precision Gunnery System (PGS)

Abrams tank and Bradley Fighting Vehicle appended device that provides a means to realistically train and sustain gunnery and tactical combat skills. The device uses laser technology to provide realistic tracer, burst and obscuration effect, and component commonality to both the gunner and vehicle commander through the vehicle sights. The system accurately calculates and records the lethality of the hit for on-board and after action review. The PGS and TWGSS programs have been combined for contracting. (Ms. Harrison, (407) 380-4251, AMCPM-CCTS)

Thru Sight Video (TSV)

The TSV is a vehicle appended system that provides a video and audio recording of gunnery engagement exercises used by M1 Abrams tank and Bradley Fighting Vehicle units, and in an institutional setting. The TSV records for playback to the gunnery or instructor/trainer, the exact gunnery sight picture in real-time; and makes a recording of crew intercom and radio transmissions for critique of gunner live fire, simulated and sub-caliber engagements. (MAJ Brown, (407) 380-4324, AMCPM-CCTS)

Project Manager for Training Devices (PM TRADE) (Cont)
Narrative Descriptions

UH-60 A/L Electrical Systems Panel Trainer

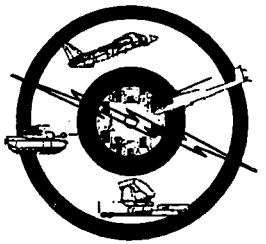
The Electrical Systems Panel Trainer is used to demonstrate the functions of the UH-60 electrical system. It provides the means for training in the maintenance, inspection, troubleshooting and safety of the aircraft electrical system. (Mr. Hartin, (407) 380-4990, AMCPM-ACTS)

UH-60 Automatic Flight Control System Trainer/BEAT

The Automatic Flight Control Systems Trainer will be used to train maintenance personnel in troubleshooting, repair, inspection and alignment procedures for the UH-60 Automatic Flight Control System. (Mr. Hartin, (407) 380-4990, AMCPM-ACTS)

PROJECT MANAGER

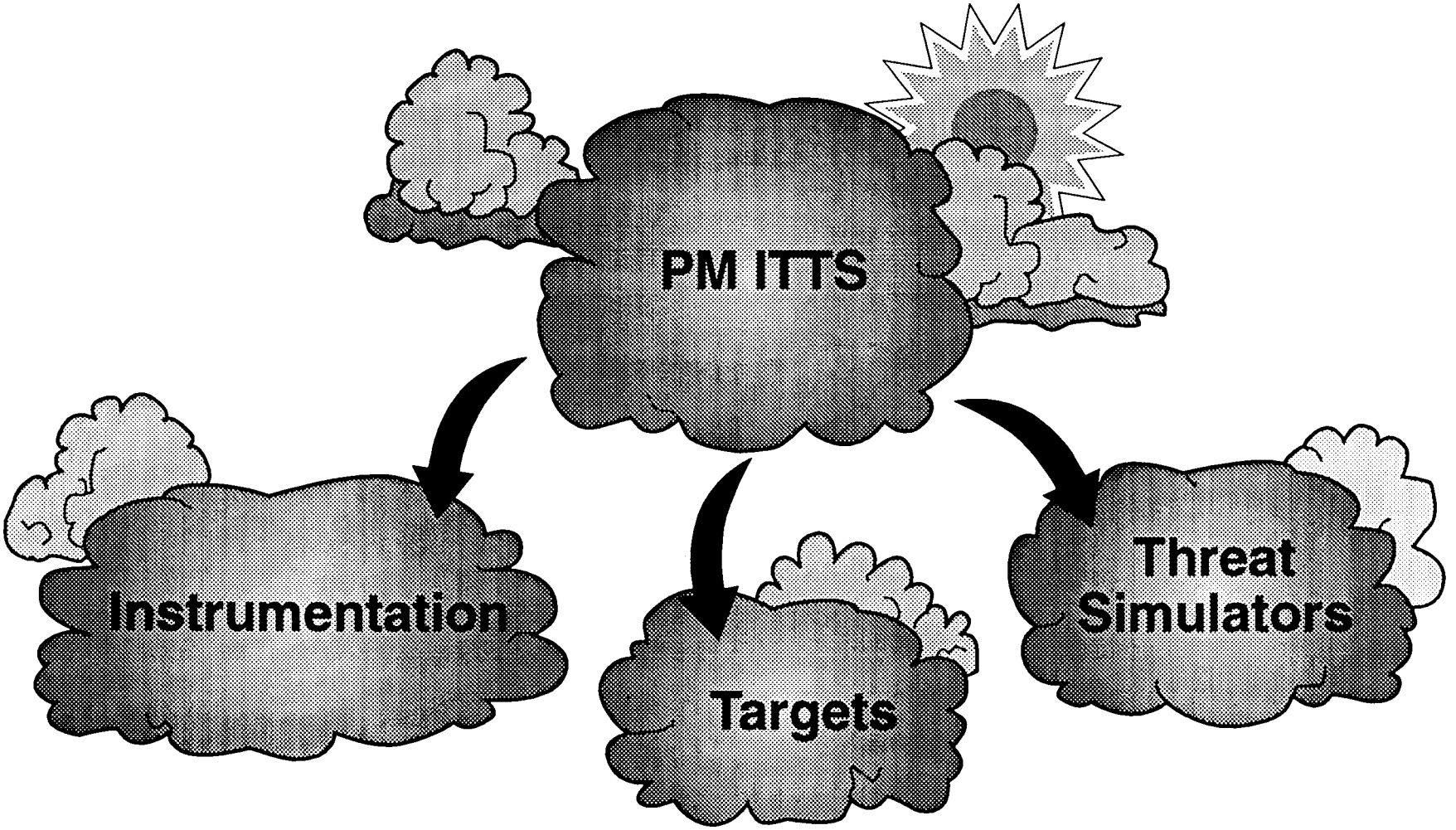
INSTRUMENTATION, TARGETS AND THREAT SIMULATORS (PM ITTS)



Colonel Stephen S. Overstreet

SECTION 3

PM ITTS

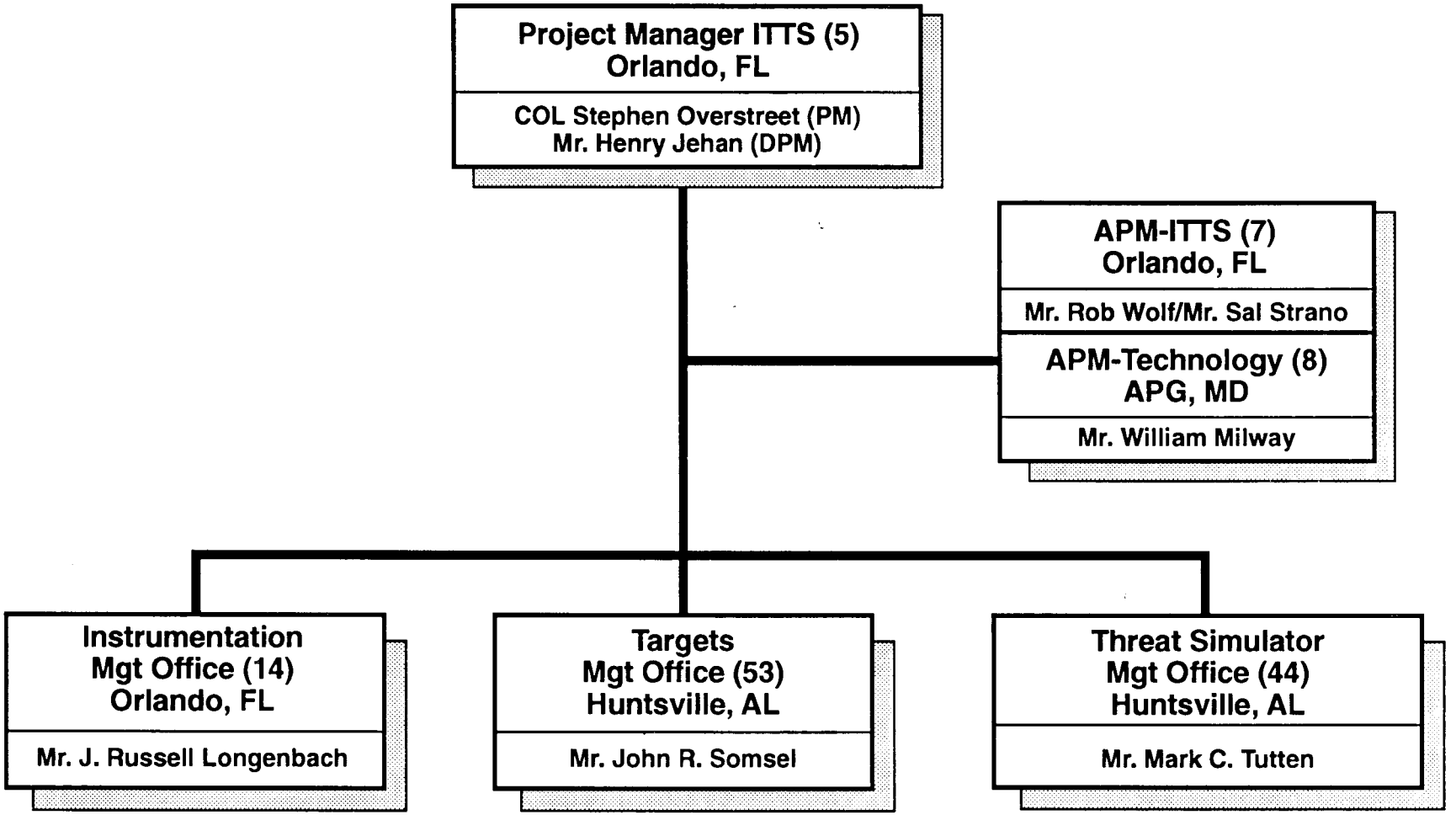


PM ITTS
Mission

- Manage the research, development, design, acquisition, fielding, modification, and capability accounting ***of major instrumentation, targets and threat simulators*** required for technical and operational test and evaluation (T&E) for the U.S. Army

- Operate and maintain targets for T&E and training

PM ITTS Organization



PM ITTS Organization

PM ITTS is structured with 3 management offices that function as project managers. Additionally, PM ITTS is responsible for the augmentation of Distributive Interactive Simulation (DIS) with ITTS programs, management of validation for targets and threat simulators, ITTS long range planning and management of the Army Test Facilities (TESTFACS) Register.

The **Instrumentation Management Office (IMO)** is responsible for the development and acquisition of major instrumentation for the Army's developmental and operational test ranges. Major instrumentation is generally defined as those efforts that are not system specific, may have joint applications, have high visibility or a large dollar value (generally a total acquisition cost in excess of $5M). Additionally, manages efforts funded by **Central Test and Evaluation Investment Program (CTEIP)** and the **Resource Enhancement Program (REP).**

PM ITTS Organization (Cont)

The **Targets Management Office (TMO)** is located at Redstone Arsenal, Alabama. This office is responsible for the management of aerial and ground target development, operation and maintenance in support of Army test and evaluation (T&E) and training. TMO also manages foreign materiel in support of testing.

The **Threat Simulator Management Office (TSMO)** located at Redstone Arsenal, Alabama, develops and fields realistic threat environments for developmental and operational test and evaluation of Army tactical systems, and when practical, training of Army and other service forces.

ITTS Characteristics

Instrumentation

- Electromagnetic, optical, audio, mechanical, etc.
- Detect, measure, record, telemeter and process
- Analyze physical parameters or quantities
- Used for technical or operational testing

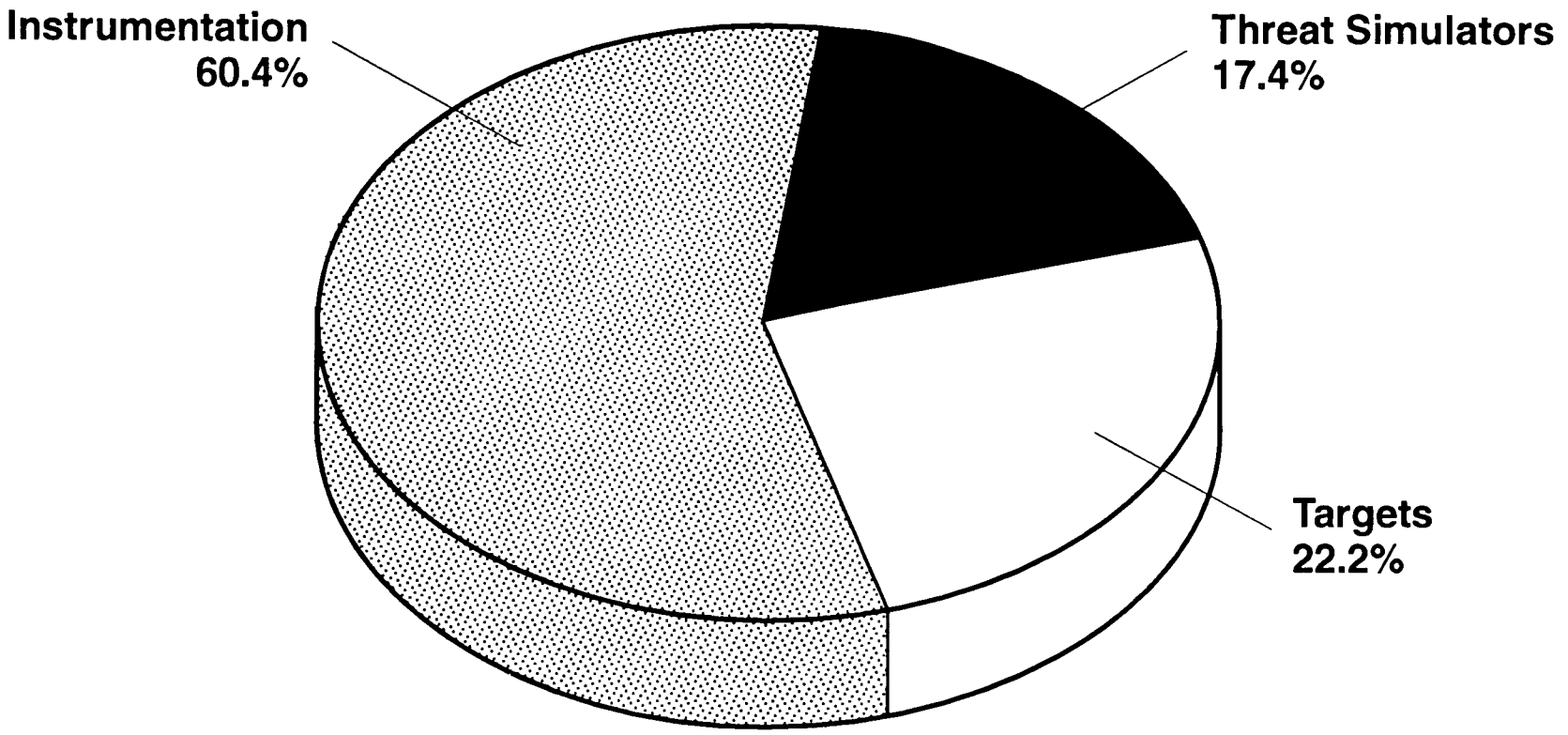
Targets

- Ground or airborne
- Support testing and training
- Economical and expendable
- Remotely controlled or stationary
- Often destroyed in test and training

Threat Simulators

- Provides appearance of actual threat
- Prescribed degree of fidelity
- Supports testing and training
- Not destroyed in test and training

Project Manager Instrumentation, Targets and Threat Simulators
Relative Investment FY94-98

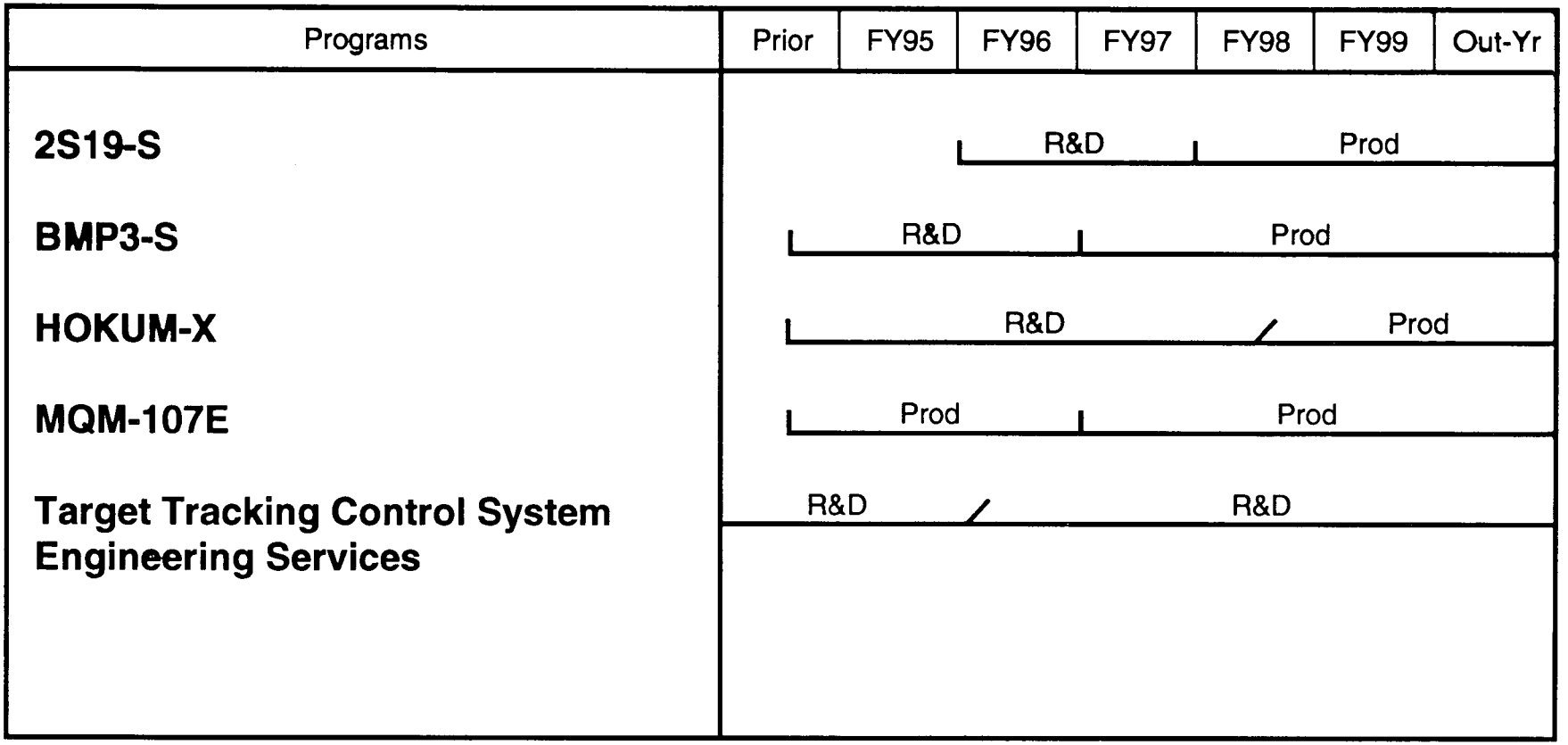


Army Major Instrumentation

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Advanced Propulsion Instrumentation (API)							R&D
Airborne Surface Ordnance Detection and Location System							R&D
Battlefield Management Interoperability C3 System (BMIC3S)							R&D
Combined Automotive Test Operation (CATO)							R&D
Dynamic IR Scene Projector			R&D				
Frequency Surveillance System			R&D				
Hardened Subminiature Telemetry and Sensor System			R&D				
High Power Microwave Test Systems							R&D
Highly Parallel Computer Acquisition (HPCA)							R&D
Test Support Network		R&D					

The Army Major Instrumentation efforts are directed to ensure that the Army and DoD have the capability to test and evaluate complex high technology weapon systems. As new technologies are developed and integrated into weapon systems, new and innovative methods of test and evaluation must be available in advance of the weapon systems to be tested. Testing requirements are shifting away from weapon specific instrumentation and moving toward advanced generic capabilities that have application to whole families of systems. Perhaps the greatest challenge will be the efficient and cost effective use of test resources, ranges, test weapons, instrumentation and personnel. One goal of the Army instrumentation effort is to develop and maintain the capability to test and evaluate the next generation and future generations of weapons systems to assure that impartial, unbiased evaluations are conducted to support Army developmental, and operational testing and training.

Targets



Economically affordable, expendable device designed to simulate all or selected threat system signatures and physical characteristics. Targets are for tracking and firing missions in support of weapon system testing and troop training exercises.

Threat Simulators Program

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
Electronic Combat Systems		R&D					
XM17S		R&D					
XMDEWS		R&D					

The objective of the Threat Simulator Program is to develop and field a capability to represent a realistic threat environment for developmental and operational testing of Army tactical systems, and when practical, training of Army and other Service forces via simulators, simulations, or actual threat equipment.

Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS)
Narrative Descriptions

INSTRUMENTATION:

Advanced Propulsion Instrumentation (API)
Instrumentation to test technologically advanced vehicle propulsion systems, i.e. all electronic drives, adiabatic diesels, electronic engine controls, and hotter diesels. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Airborne Surface Ordnance Detection and Location System
System is designed for airborne detection, identification and mapping system to precisely identify and locate the position of unexploded surface ordnance. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Battlefield Management Interoperability C3 System (BMIC3S)
Instrumentation suite to test and evaluate interoperability and performance of the Battle Management C3 functions for NMD, TMD, CORPS SAM, and other AD Weapons Systems. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Combined Automotive Test Operation (CATO)
A 2-dimensional vehicle test area for testing and evaluating vehicle dynamics and stability, tank fire control and stabilization, anti-lock brake systems, and robotics control. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS)
Narrative Descriptions

INSTRUMENTATION (Cont):

Dynamic Infrared Scene Projector
Provides capability to fully simulate and synthesize present and future battlefields with a mix of real and simulated objects in the 3 to 14 micron wavelength region under a wide range of scenarios. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Frequency Surveillance System
The Frequency Surveillance System (FSS) will replace, upgrade, and remote daily operations for surveillance of the radio frequency spectrum used at White Sands Missile Range (WSMR) and adjacent areas to support all services and non-DoD agencies. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Hardened Subminiature Telemetry and Sensor System
Develop and demonstrate a new generation of rugged and subminiature instrumentation measurement technologies applicable to smart weapon system flight tests. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

High Power Microwave Test Systems
Capability will be used for the test and evaluation of military materiel and systems in realistic open air HPM directed energy environments.
(Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS)
Narrative Descriptions

INSTRUMENTATION (Cont):

Highly Parallel Computer Acquisition (HPCA)
Computer for full Dynamic "C3I" performance analysis in the battlefield of communications imaging, battlefield computers, mapping/position location and sensors. (Debra Davis, (407) 381-8775, AMCPM-ITTS-T)

Test Support Network
The Test Support Network (TSN) is a three phase Nondevelopmental Item/Commercial Off the Shelf integration project to modernize and provide a secure, reconfigurable, back-bone telecommunications and data transmittal network from 3000 surveyed instrumentation sites on White Sands Missile Range.

TARGETS:

2S19-S
Full scale ground target which emulates a Soviet self-propelled howitzer. In concept definition stage. (Dave Bundy, (407) 381-8777, AMCPM-ITTS-T)

BMP3-S
Full scale gound target which emulates the Soviet BMP3 infantry fighting vehicle. Currently in concept definition stage. (Dave Bundy, (407) 381-8777, AMCPM-ITTS-T)

Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS)
Narrative Descriptions

TARGETS (Cont):

HOKUM-X

Full scale aerial target which emulates the Russian Ka-50 Helicopter. To be used in support of major weapon system T&E. Defense development sharing agreement – cooperative development with the Canadian Government. (Dave Bundy, (407) 381-8777, AMCPM-ITTS-T)

MQM-107E

Sub-Scale, subsonic, fixed wing aerial target used in support of weapon system testing and training. Production is in support of Army and Air Force requirements. Current contract expires in FY96. New production contract will be awarded in FY97. (Dave Bundy, (407) 381-8777, AMCPM-ITTS-T)

Target Tracking Control System (TTCS) Engineering Services

The TTCS is a tracking and control radar system used for command and control of airborne targets. The engineering services contract provides modifications to the TTCS in support of special mission requirements and operational enhancements. Current contract expires Sept. 30, 1995. Procurement package to be released in second quarter of FY95. (Dave Bundy, (407) 381-8777, AMCPM-ITTS-T)

Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS)
Narrative Descriptions

THREAT SIMULATORS:

Electronic Combat Systems
Airborne and ground based communications and radar jammers which provide functional and parametric representations of foreign weapon systems. (Henry Lastra, (407) 381-8809, AMCPM-ITTS-T)

XM17S
Represents an advanced air defense system as a follow-on to the XM11S. Currently in the concept exploration phase. (Henry Lastra, (407) 381-8809, AMCPM-ITTS-T)

XMDEWS
Family of tactical directed energy weapons system simulations. Concept plan is complete. Currently in concept exploration phase. (Henry Lastra, (407) 381-8809, AMCPM-ITTS-T)

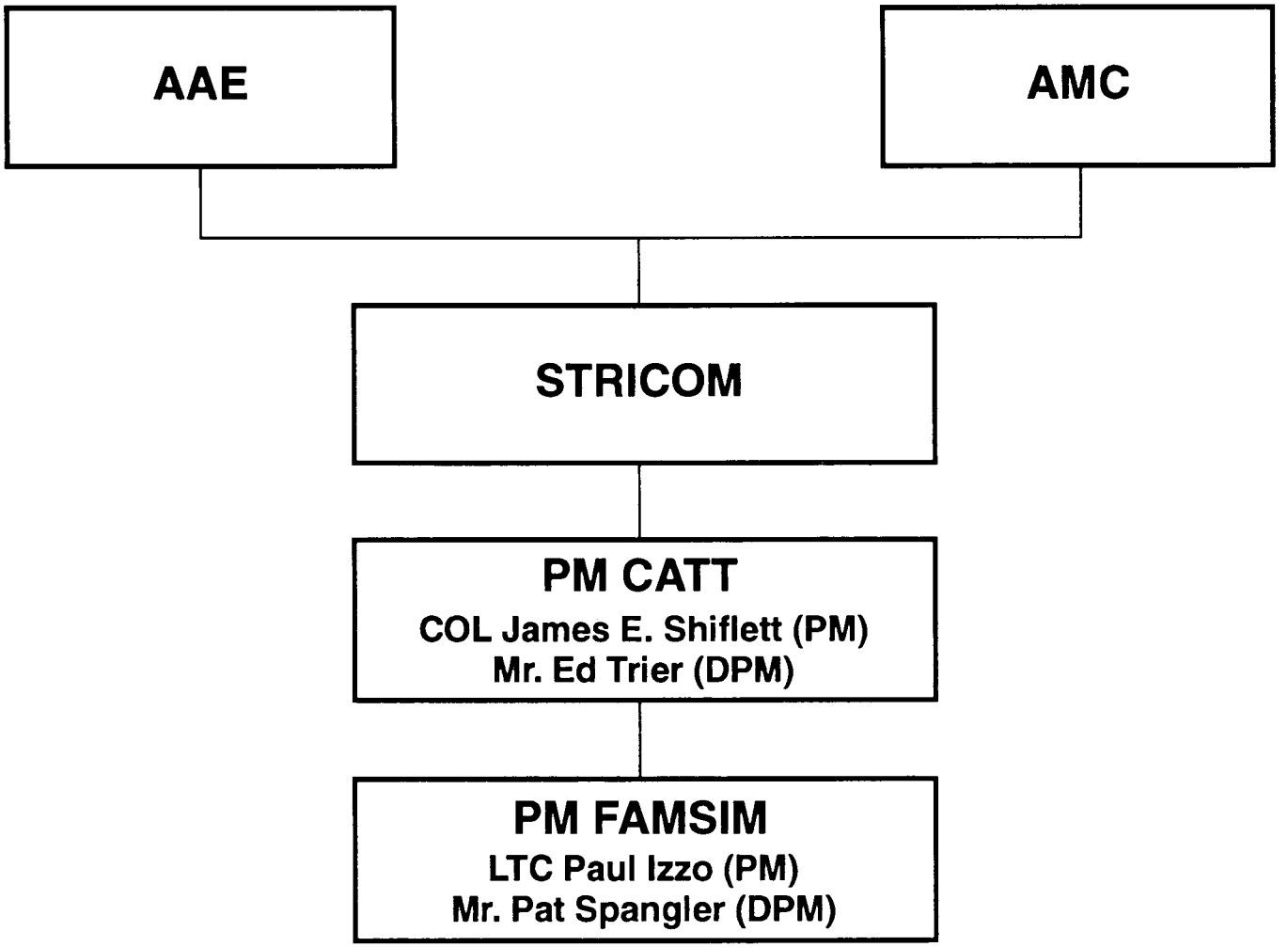
PROJECT MANAGER

COMBINED ARMS TACTICAL TRAINER (PM CATT)

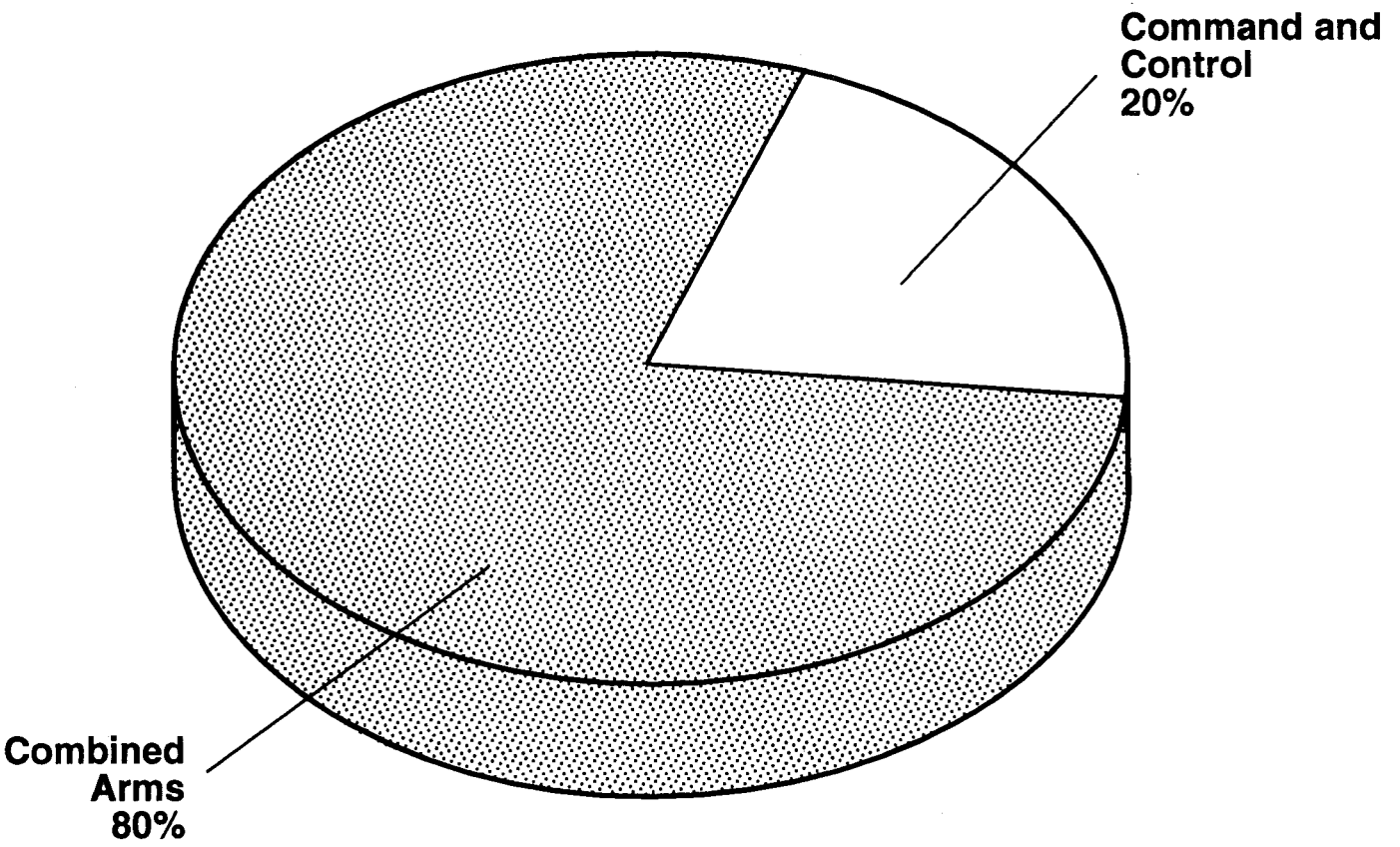
Colonel James E. Shiflett

SECTION 4

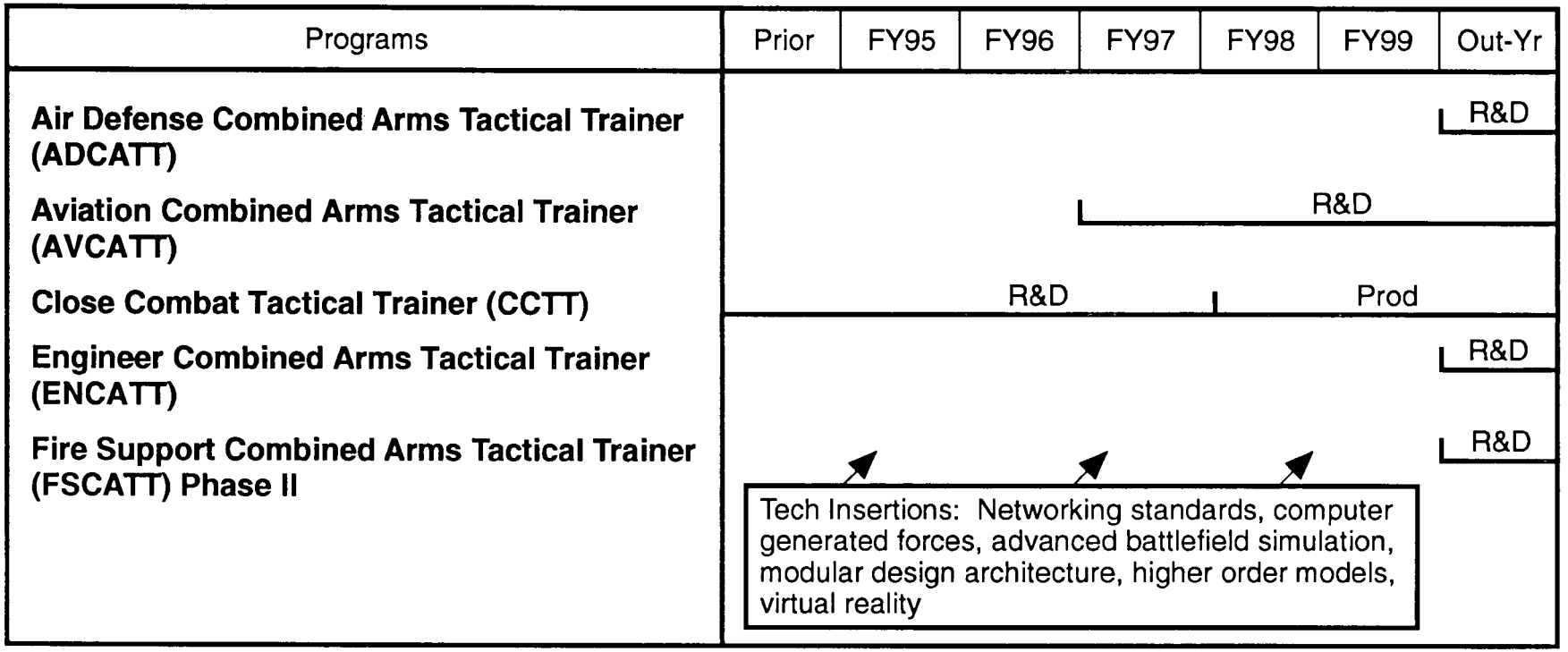
PM CATT


AAE
AMC
STRICOM
PM CATT
COL James E. Shiflett (PM)
Mr. Ed Trier (DPM)
PM FAMSIM
LTC Paul Izzo (PM)
Mr. Pat Spangler (DPM)

Project Manager Combined Arms Tactical Trainer



Combined Arms Tactical Trainer



The CATT family, presently composed of Close Combat Tactical Trainer (CCTT), Fire Support Combined Arms Tactical Trainer (FSCATT) Phase II, Aviation Combined Arms Tactical Trainer (AVCATT), Air Defense Combined Arms Tactical Trainer (ADCATT), and Engineer Combined Arms Tactical Trainer (ENCATT), creates a surrogate wargaming world in which simulators are used as a means of waging unconstrained warfare. They will provide a "combat area" in which combatants can engage in actual warfare without having to consider peacetime safety, environmental, or terrain restrictions. Each crew member of the simulated weapon systems provides "man-in-the-loop" intervention into the battle. The ground simulators will include the M1 family of tanks, the M2/M3 fighting vehicles, FISTVS, field artillery, air defense platforms, as well as other combat, combat support, and combat service support common to the battlefield. Air simulators will include both scout and attack helicopters. The Battlefield Distributed Simulation-Developmental (BDS-D) Technology Base Program will provide technology insertions to support an accredited warfighter-in-the-loop, real-time, distributed simulation of a virtual combined arms battlefield.

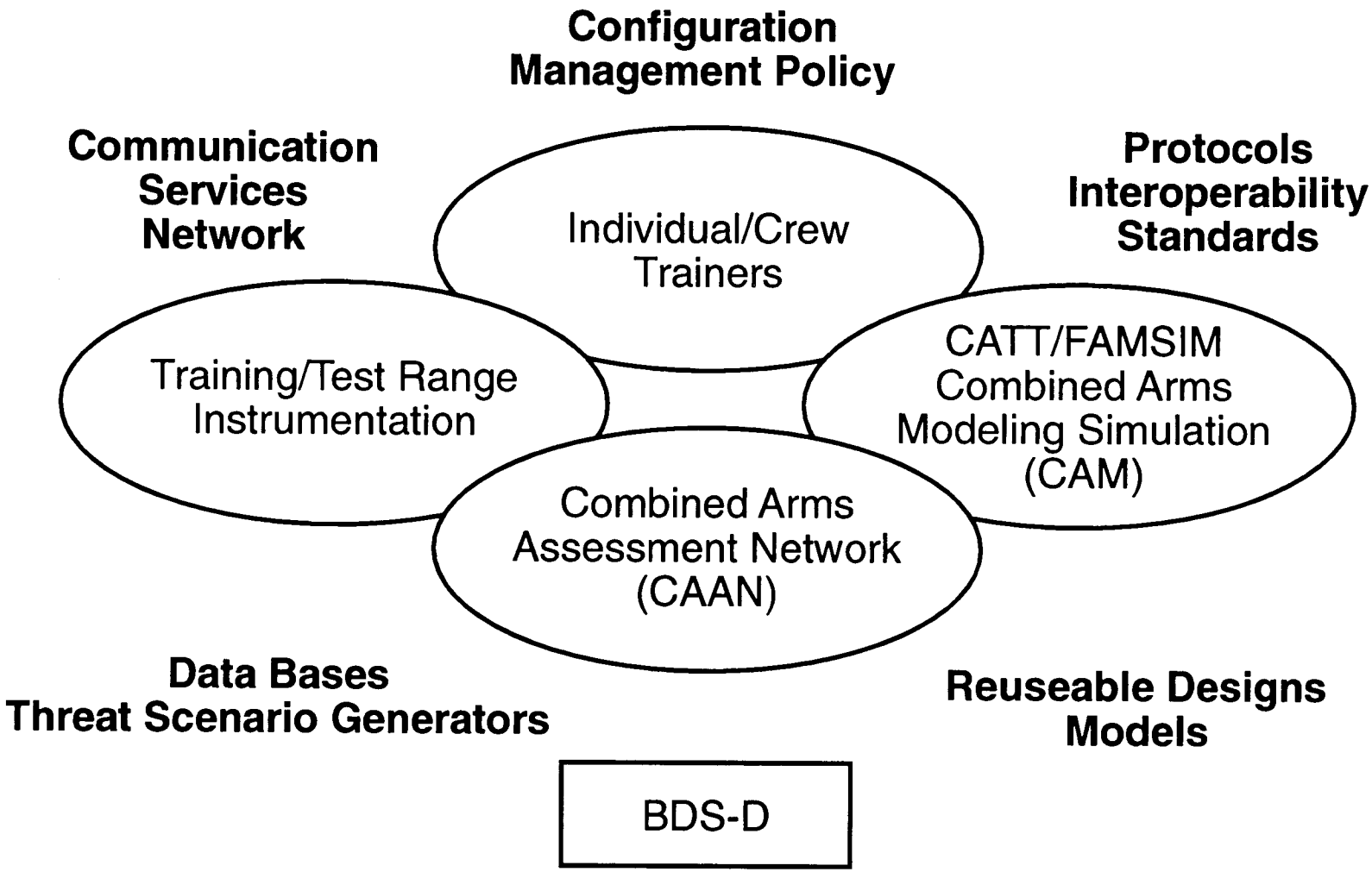
DIS Management Structure

The Army management structure provides for policy and advice from the Deputy Under Secretary of the Army (Operations Research) and a General Officer Steering Committee (GOSC) to the Executive Agent (HQDA DCSOPS). Functional management resides with TRADOC while AMC (STRICOM) provides technical management.

The user community provides their needs to the Functional Manager which in turn get converted into technical requirements and, eventually, changes to the Synthetic Environment.

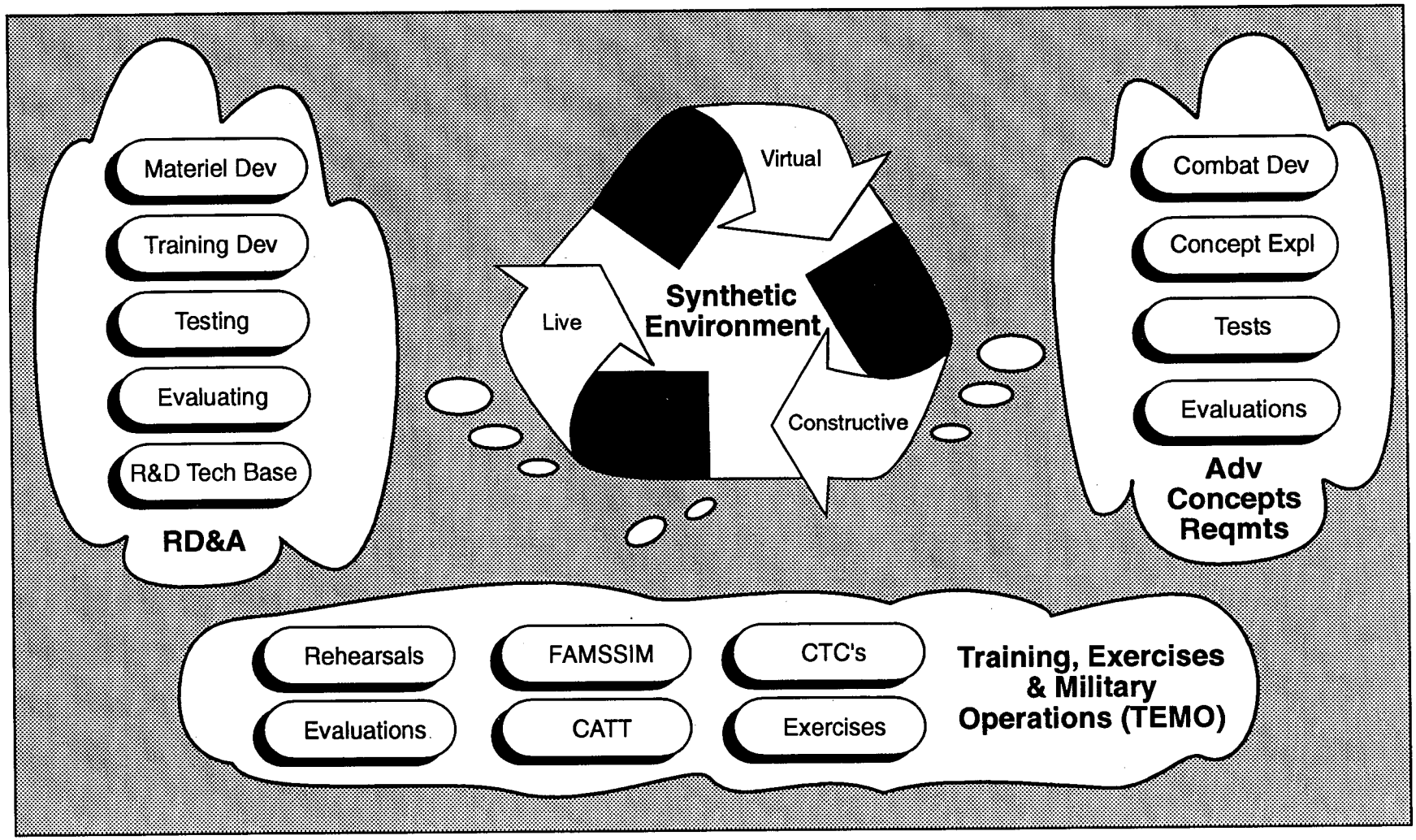
The Battlefield Distributed Simulation – Developmental (BDS-D) Program is the technology development initiative which ensures required capability exists when called for. Thus, the program feeds the Functional Manager with definitions of capability while identifying technology development issues for the Technical Manager.

DIS Architecture



DIS Synthetic Environment

A time and space coherent representation of a battlefield environment measured in terms of human perception and behavior of those interacting in the environment.

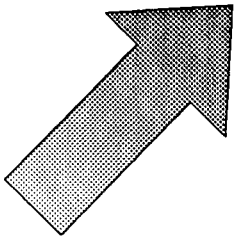


DIS Synthetic Environment

The DIS concept calls for development of a *Synthetic Environment* which functionally represents the **Research, Development, and Acquisition (RDA) Domain**, the **Training, Exercise, and Military Operations (TEMO) Domain**, and the **Advanced Concepts Requirements (ACR) Domain.** These domains represent the Functional Manager's vision of eventual DIS coverage. Within each domain are various communities which are specifically identified for inclusion. Initially, the RD&A domain has been the greatest benefactor as new weapon systems are "played" in the synthetic environment during their design, development, and deployment.

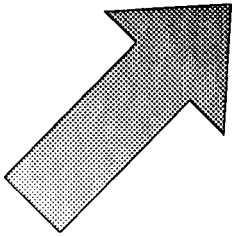
DIS is intended to bring together elements of the three forms of simulation; Virtual (e.g., manned simulators), Constructive (computer models, e.g., large-scale wargames), and Live (real equipment under real circumstances, e.g., National Training Center).

DIS Today



Application

- Operational Testing (NLOS)
- Training (BCTP)
- Virtual Prototyping (Tank)



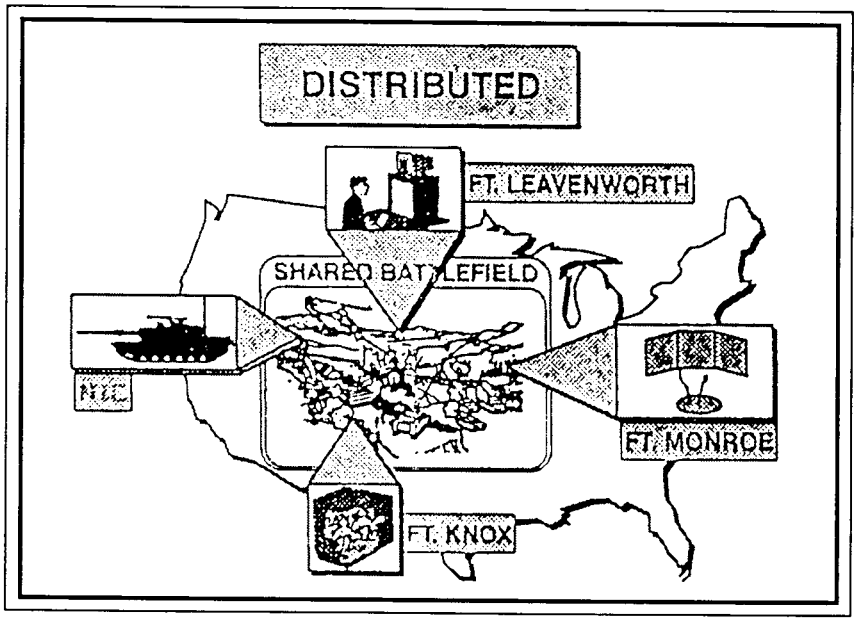
Capability

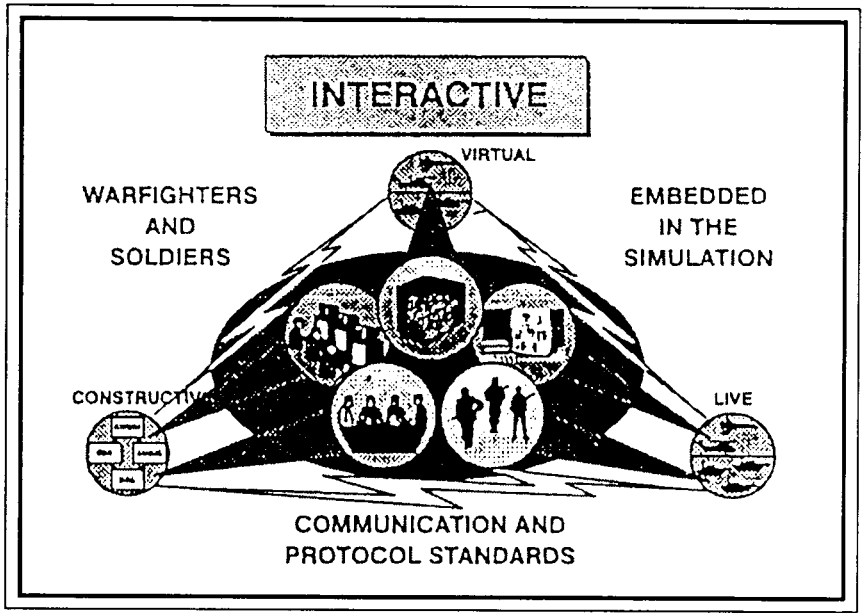
- SIMNET (Training)
- Battlefield Distributed Simulation – Developmental Program
- Defense Simulation Internet
- Battle Simulation Centers/Battle Projection Centers

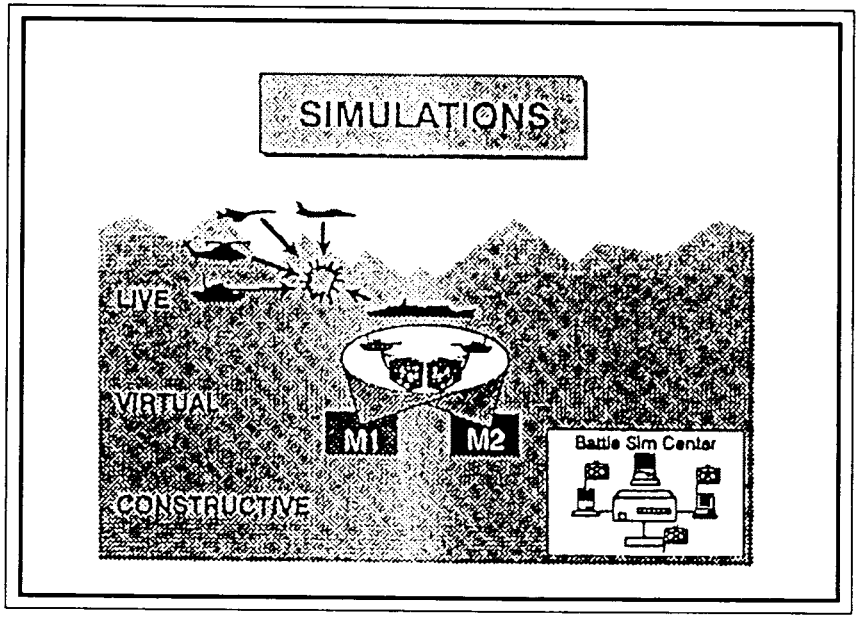
Research

- IEEE Standards
- Battlefield Distributed Simulation – Developmental (Janus)
- Battlefield Distributed Simulation – Developmental (Eagle)
- Dynamic Terrain
- Computer Generated Forces

Evolving Policies and Procedures







EVERYTHING IS SIMULATION EXCEPT COMBAT

			EXAMPLES
OPERATIONS WITH REAL EQUIPMENT IN THE FIELD	=	LIVE	• FTX/JTX • Red Flag • NTC • CMTC • JRTC • Strike University • Prototypes • Desert Shield • Fleet Opns
WARGAMES, MODELS, ANALYTICAL TOOLS	=	CONSTRUCTIVE	• CBS (Army) • AWSIM (Air Force) • ENWGS (Navy) • TACWAR (Joint) • TAC Brawler (Air Combat)
TROOPS IN SIMULATORS FIGHTING ON SYNTHETIC BATTLEFIELDS	=	VIRTUAL	• SIMNET-ODIN/CCTT • Navy Tac Comm Sys Afloat (NTCSA) • Battle Force Tactical Training (BFTT) • Aircraft Simulators • Virtual Prototypes (NLOS, LOSAT)

Increasingly, Simulation Tools Go To War

DIS
Further Defined

Distributed

- Multiple Sites
- Networks
- Shared Environment

Interactive

- Standards and Protocols
- Common Architecture
- Seamless Communication

Simulation

- Live
- Constructive
- Virtual

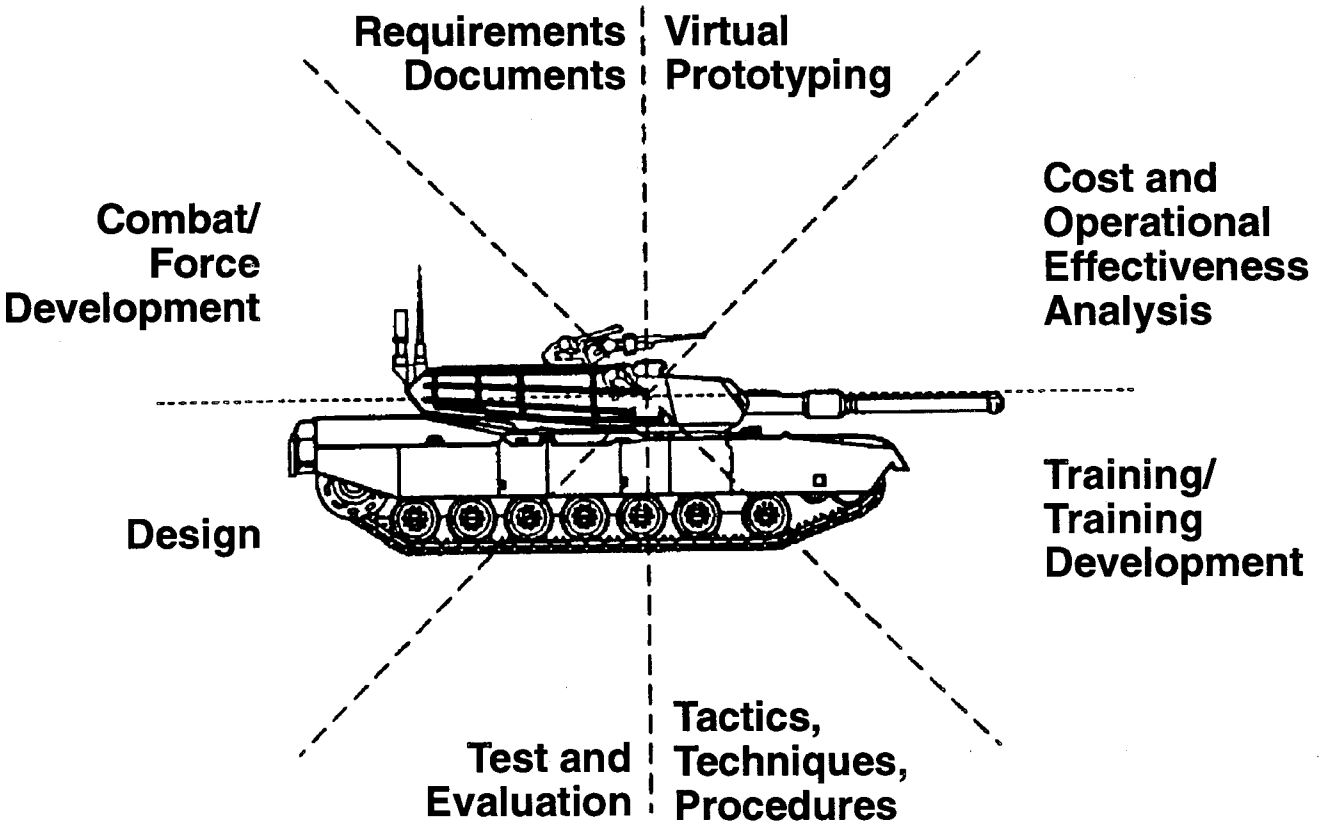
In order to fully understand PM DIS, one must first understand the concept of the Synthetic Environment. DIS represents an umbrella concept for simulation of the future. The intent is to provide an opportunity for all elements of the military to experience all phases of conflict, so they can fully exploit advances in technology acquisition and development on a virtual battlefield to conduct missions in the three DIS domains of Training, Exercises, and Military Operations (TEMO); Research, Development, and Acquisition (RDA); and, Advanced Concepts Requirements (ACR).

DIS: A Definition

- A Synthetic Environment within which humans may interact through simulation(s) at multiple sites networked using compliant architecture, modeling, protocols, standards, and data bases.
  - Warfighter-in-the-Loop Simulations
  - Emphasis on the Combined Arms Battlefield
  - Object Based Models
  - Visual Based Displays
  - Current emphasis on Virtual, but expansion into Constructive and Live Simulations

PM DIS Typical Experiment Objectives

Provide "Warfighter-In-The-Loop" Synthetic Environment for ...



PM CAAN Missions

- Manages the Combined Arms Assessment Network facilities in the support of experiments, studies, research, analysis, and related projects. Specifically responsible for the four U.S. Army Core DIS Facilities (CDFs) designated:
  - Land Warrior Test Bed (LWTB), Fort Benning, GA
  - Mounted Warfare Test Bed (MWTB), Fort Knox, KY
  - Aviation Test Bed (AVTB), Fort Rucker, AL
  - Operational Support Facility (OSF), Orlando, FL
- Performs coordination and integration of DIS activities and the Synthetic Environment at the CDFs in support of TRADOC Battle Labs, the Louisiana Maneuvers (LAM), Research, Development, & Engineering Centers (RDECs), Program Executive Offices PEOs) and Managers of Top Level Demonstrations (TLDs)/Advanced Technology Demonstrations (ATDs).
- Integrates customers requirements leading to the modernization of the Combined Arms Assessment Network

DIS: Program Components

DIS Workshop

- Strategic change . . . to challenge
- Video: "DIS: Looking for the future"
- DIS History
- Defining DIS
- DIS: A concept
- DIS: What it is not
- DIS: The potential
- DIS: Today
- DIS: Future

DIS Master Plan

WHAT IT DOES

- Conveys the User's Vision of the DIS Synthetic Environment
- Establishes the relative importance of its elements
- Assesses current DIS capabilities
- Sets general priorities for submitted requirements

WHAT IT'S USED FOR

- To define process necessary to achieve the vision
- To organize collective efforts of DIS
- To guide allocation resources

DIS Modernization Plan

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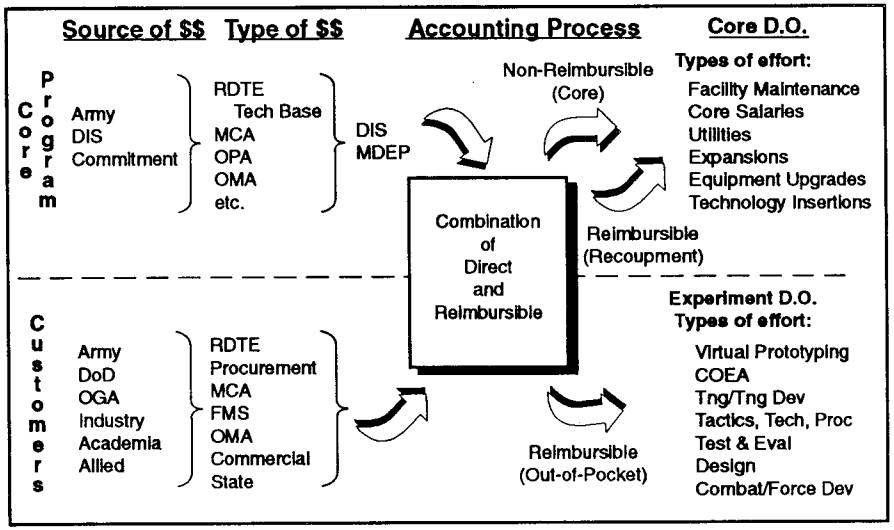
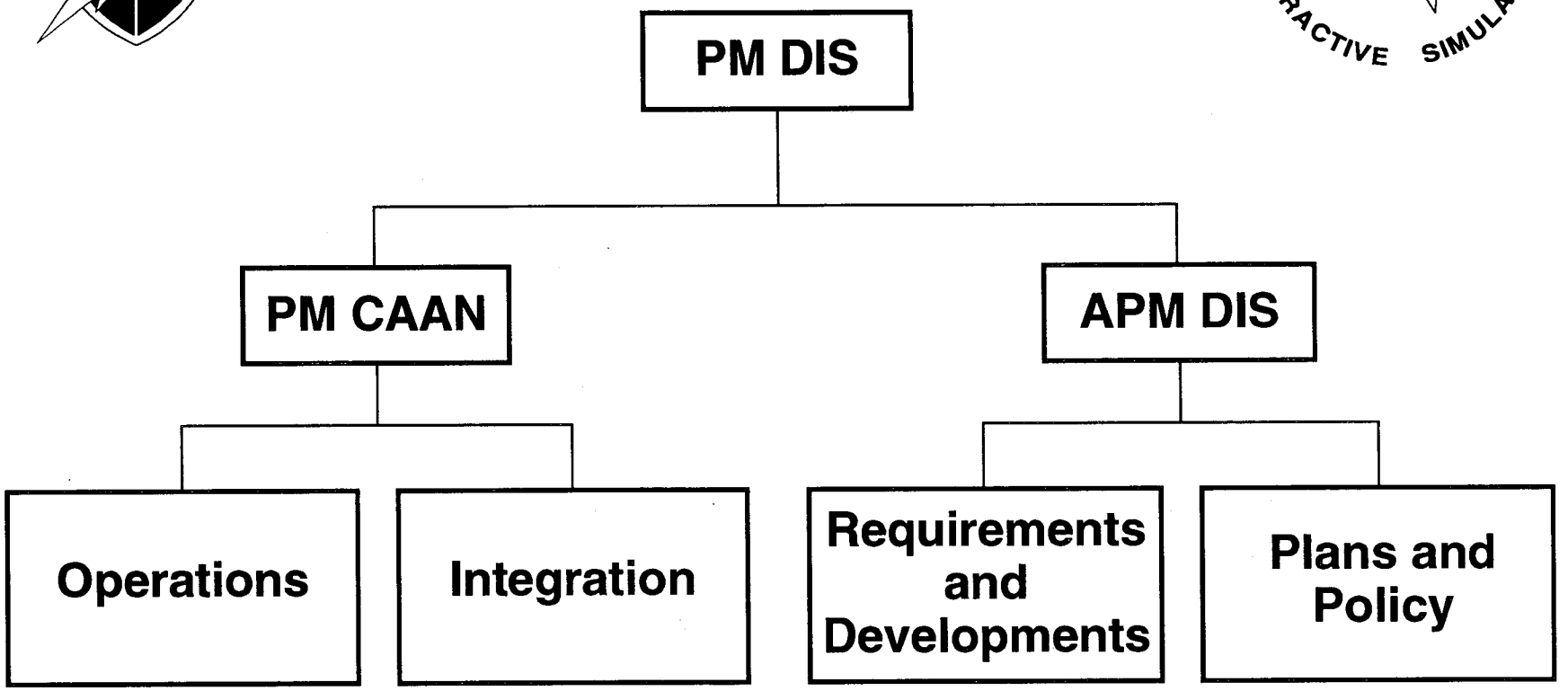
The DIS Process MDEP



PM DIS
Mission

- Performs as the Army's Technical Manager for Distributed Interactive Simulation (DIS).
- Responsibility for the materiel development of the Army Synthetic Theater of War (STOW) which will seamlessly link Live, Virtual and Constructive Simulations.
- Develops and Maintains the Army's DIS Modernization Plan (DIS MODPLAN).
- Responsible for Technical Configuration Management of DIS.
- Coordinates the exploitation of emerging DIS Technologies from Industry, ARPA, Academia, and other Research & Development activities.
- Develops, maintains, and coordinates execution of the Army's DIS Management Decision Package (MDEP) for all funding activities.
- Acts as the DoD Lead/Coordination Activity responsible for development of DIS Standards & Architecture.
- Overall responsible for the coordination and execution of the AMC DIS Advisory Board and Working Group. Performs as the Working Group's President.

PM DIS Organization



Project Manager
Distributed Interactive Simulation

Colonel James Etchechury, PM
Mr. John Collins, ADPM

The Project Manager for Distributed Interactive Simulation has been established to execute STRICOM's project management responsibilities for development and modernization of the Distributed Interactive Simulation (DIS) Synthetic Environment. The formation of PM DIS was one of the primary reasons for AMC's establishment of STRICOM.

The Department of Defense has designated STRICOM with the lead responsibility for the technical development of DIS standards and architecture. PM DIS will execute the STRICOM mission ensuring that multi-service implications are included in all standardization development. Further, industry, allies, and academia are also expected to continue to be deeply involved in DIS development requiring additional coordination and an expanding management effort.

Project Manager Distributed Interactive Simulation

(PM DIS)

Colonel James Etchechury

SECTION 5

Project Manager for Combined Arms Tactical Trainer (PM CATT) (Cont)
Narrative Descriptions

Fire Support Combined Arms Tactical Trainer (FSCATT) - Phase II

The Fire Support Combined Arms Tactical Trainer (FSCATT) - Phase II is a distributed process networked simulation system which will provide combined arms collective training of Field Artillery Units. FSCATT Phase II operating in a closed loop mode, provides training of the Field Artillery gunnery team (Forward Observer, Fire Direction and Firing Battery Personnel), providing them feedback on their proficiency while conserving fuel and ammunition. FSCATT Phase II provides the capability for the closed loop system to interoperate with other CATT systems. Additional manned modules enable howitzer batteries and Battalion Staffs to conduct tactical fire support operations in a combined arms, computer simulated environment. Using common CATT components and Distributed Interactive Simulation (DIS) technology, FSCATT manned modules are capable of stand alone combined arms operations using Semi-Automated Forces (SAF) and emulator workstations. It is also capable of conducting training with other systems of the CATT family. (MAJ Joe Schwab (407) 384-3226, AMCPM-CATT)

JANUS

JANUS is an interactive automated simulation providing Company and Platoon level leaders with Battle Focus Training. JANUS uses a simulation system developed by the TRADOC Analysis Command (TRAC) and adapted to support both the training and analytic communities. (Ms. Burmester (407) 384-3213, AMCPM-FAMSIM)

Warfighter's Simulation (WARSIM) 2000

WARSIM 2000 is the next generation battle simulation to be fielded as a replacement to CBS and BBS. WARSIM 2000 will support training at Battalion through Theatre level. WARSIM will be an open architecture, DIS-compliant simulation and will link to other simulations including Army and other DoD/service simulations. (Mr. Simons, (407) 384-3222, AMCPM-FAMSIM)

Project Manager for Combined Arms Tactical Trainer (PM CATT) (Cont)
Narrative Descriptions

Corps Battle Simulation (CBS)

CBS is a Corps and Division level battle simulation used to support Command and Control training for the Commander and his Battle Staff, and major subordinate elements of the corps in the conduct of Airland Battle operations. It is used to exercise the command staff skills and procedures in the command and control of operational/tactical forces, joint or combined arms forces, and the combat support and combat service support systems through a simulated environment. CBS supports the collective force level training of all U.S. Army Corps, as well as Active and Reserve component Division Commanders and Battle Staff personnel as part of those Corps, in Command, Control, and Staff exercises. It is also the exercise driver for the Battle Command Training Program (BCTP) Warfighter Exercises. (MAJ Harrison, (407) 384-3208, AMCPM-FAMSIM)

Engineer Combined Arms Tactical Trainer (ENCATT)

The Engineering Combined Arms Tactical Trainer (ENCATT) is a distributed processing, networked simulation system which allows engineer units to train collective tasks associated with command and control, mobility, countermobility and survivability on a simulated interactive battlefield. It will consist of a group of fully interactive simulators replicating the Combat Engineer Vehicle/M1 Breacher, Armored Vehicle Launched Bridge/Heavy Assault Bridge, M9 Armored Combat Earthmover, D7G Dozer and Engineer Squad Carriers. Friendly and opposing forces will be affected by engineer combat support efforts throughout the simulated combined arms, interactive battlefield. ENCATT will be capable of operations in a stand alone mode using Semi-Automated Forces or networked with other CATT variants. (Mr. Dave Meyers (407) 384-3206, AMCPM-CATT)

Project Manager for Combined Arms Tactical Trainer (PM CATT) (Cont)
Narrative Descriptions

Brigade/Battalion Battle Simulation (BBS)

BBS is an automated simulation to train Brigade/Battalion Commanders and Staffs by exercising procedures and decision making skills essential to win on the modern battlefield. (Mr. Magee, (407) 384-3234, AMCPM-FAMSIM)

Close Combat Tactical Trainer (CCTT)

The Close Combat Tactical Trainer (CCTT) is a distributed processing, networked simulation system which allows mechanized infantry and armor units to conduct tactical maneuver training in a combined arms, computer simulated combat environment. It is composed of various simulators replicating combat vehicles, tactical vehicles, and weapon systems of a heavy maneuver company/team interacting in real-time with each other and Semi-Automated Force (SAF) opposing forces. Units operating on the simulated battlefield are supported by Combat Support and Combat Service Support operating systems organic to or in direct support of the Battalion/Task Force. All battlefield operating systems are represented in the simulation. (Mr. Edwards, (407) 384-3202; Mr. Brookins, (407) 384-3203; and MAJ Bill Johnson, (407) 384-3210, AMCPM-CATT)

Combat Service Support Training Simulation System (CSSTSS)

The CSSTSS is a battle simulation designed to exercise the DISCOM, COSCOM, and EAC Combat Support and Combat Service Support commanders and their staffs. It will provide the ability to exercise all classes of supply and logistics in support of the Airland Battle Doctrine. It will interface with Combat Simulations to provide realistic CS and CSS simulation in support of the maneuver commander as well as the interactions among CS and CSS elements. The CSSTSS will be fielded to all Corps, selected reserve locations, 21st TAACOM, and Eighth U.S. Army. (Mr. Mosley, (407) 384-3212, AMCPM-FAMSIM)

Project Manager for Combined Arms Tactical Trainer (PM CATT)
Narrative Descriptions

Air Defense Combined Arms Tactical Trainer (ADCATT)

The Air Defense Combined Arms Tactical Trainer (ADCATT) is a distributed process, networked simulation system which allows short range Air Defense (SHORAD) units to train collective tasks associated with the support of Mechanized and Armor Maneuver units. It consists of mobile platoon sets of the Avenger or M2 BFV Stinger Under Armor. Emulator workstations represent the Forward Area Air Defense (FAAD) Command and Control network. Combat Support and Combat Service Support functions of the combined arms battlefield are included in each platoon set. In addition, Semi-Automated Forces (SAF) workstations which replicate realistic opposing forces and supplemental friendly forces are also provided. An after action review station provides performance feedback for the crews ensuring that all training is performed to standards. ADCATT is capable of operations in a stand alone mode using SAF or it can be networked with other CATT systems. (MAJ Bill Johnson, (407) 384-3210, AMCPM-CATT)

Aviation Combined Arms Tactical Trainer (AVCATT)

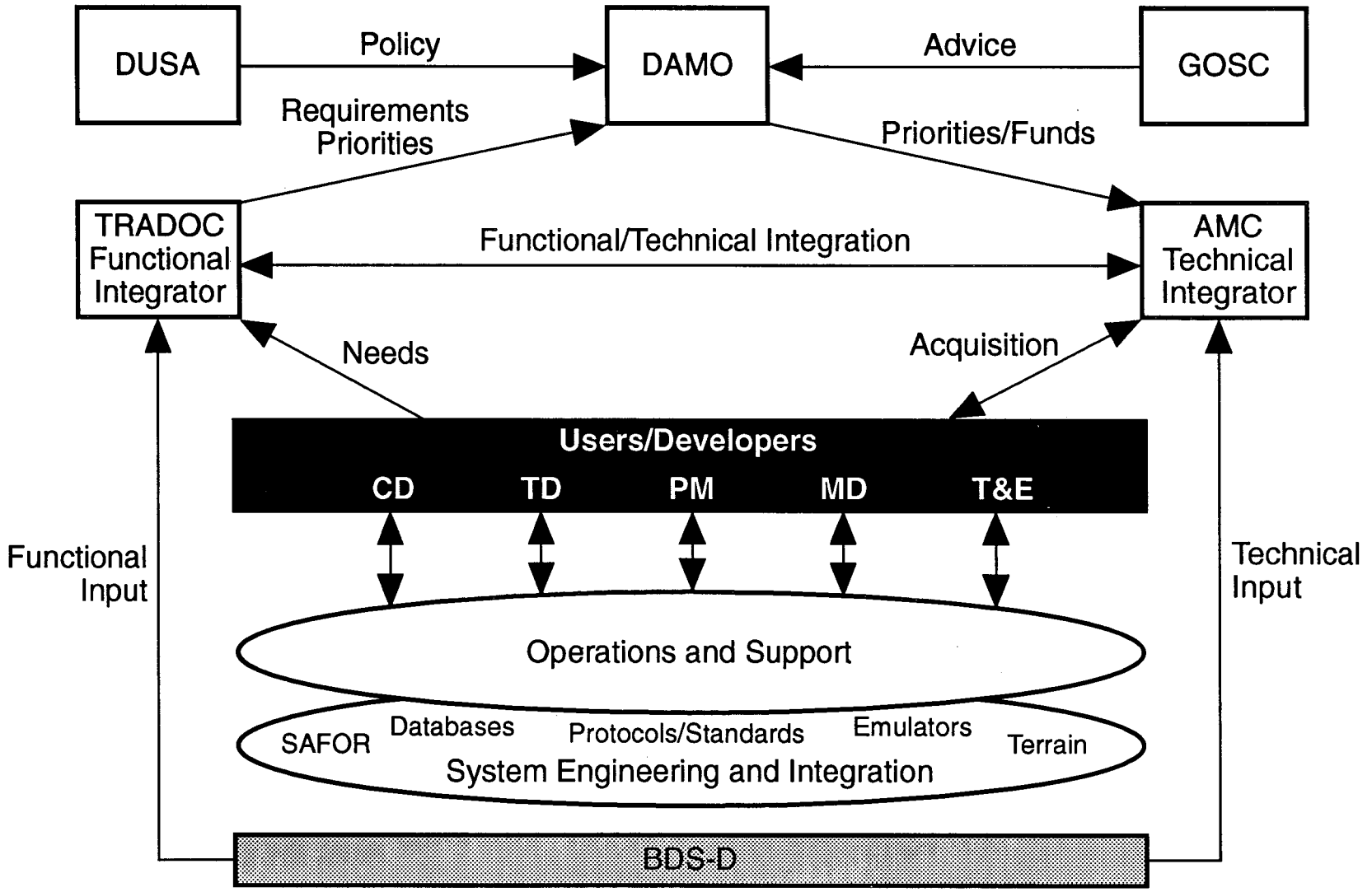
The Aviation Combined Arms Tactical Trainer (AVCATT) is a distributed interactive, networked simulation system which allows for individual, crew, collective and combined arms training. Adequate number of manned aviation simulators will be fielded to replicate attack company, reconnaissance, troop, and assault platoon configurations. AVCATT will comprise the AH-64 Attack Helicopters; RAH-66, CH-47, OH-58D, and UH-60 systems; emulator workstations representing Command, Control, Communications, and Intelligence (C3I), Combat Support and Combat Service Support aspects of the combined arms battlefield; and Semi-automated Forces (SAF) replicating enemy forces and/or augmenting friendly forces. All battlefield operating systems will be represented in the simulation. AVCATT will provide for both stand-alone aviation specific training and interaction with other collective task trainers, i.e., CCTT and Air Defense Combined Arms Tactical Trainer (ADCATT), thereby providing the aviation link to a total combined arms tactical training device strategy. (Ms. Shirley Rubens, (407) 380-4967, AMCPM-CATT)

Command and Control Simulations

Programs	Prior	FY95	FY96	FY97	FY98	FY99	Out-Yr
JANUS	Prod		Sustainment				
Brigade/Battalion Battle Simulation (BBS)	Prod		Sustainment (Limited Enhancements)				
Corps Battle Simulation (CBS)	Prod		Sustainment (Limited Enhancements)				
Combat Service Support Training Simulation System (CSSTSS)	R&D		Prod		Sustainment		
Warfighters' Simulation (WARSIM) 2000	R&D						Prod

Command and Control Simulations are Constructive Simulations used to train Commanders and their Staffs. The Family of Simulation (FAMSIM) is a set of simulations, centrally managed by the Army, to provide training for Company/Team through Theater levels. JANUS is based on a TRADOC Analysis Command (TRAC) model, adopted by the Army for Company/Team Battle Focus Training and Brigade/Battalion Seminar training. A Production Contract was awarded in FY93. Software support is by STRICOM using the Communications-Electronics Command (CECOM) Life Cycle Software Engineering Center (LCSEC). BBS is the Army's standard for Battalion and Brigade training used primarily to drive Command Post Exercises (CPX). CBS is the Army's Corps and Division Command and Control Simulation. A FAMSIM Hardware Contract, awarded in FY92, is used for both BBS and CBS. CECOM-LCSEC supports both BBS and CBS for STRICOM. Minor R&D enhancements are on-going for CBS and BBS, by JPL and CECOM-LCSEC, respectively. CSSTSS is the Army's Logistics counterpart to CBS and BBS. The CSSTSS Development Contract was awarded in FY92 to SAIC. Production will begin in FY96, with an expected RFP release in FY95. WARSIM 2000 is the Army's Next Generation, State-of-the-Art battle simulation. WARSIM will be DIS-compliant, interface with operational C2 Systems, and be designed to reduce simulation overhead through automation. A Competitive Development RFP was released in Jul 94. Initial development awards are expected in 3Q FY95.

DIS System Management Structure



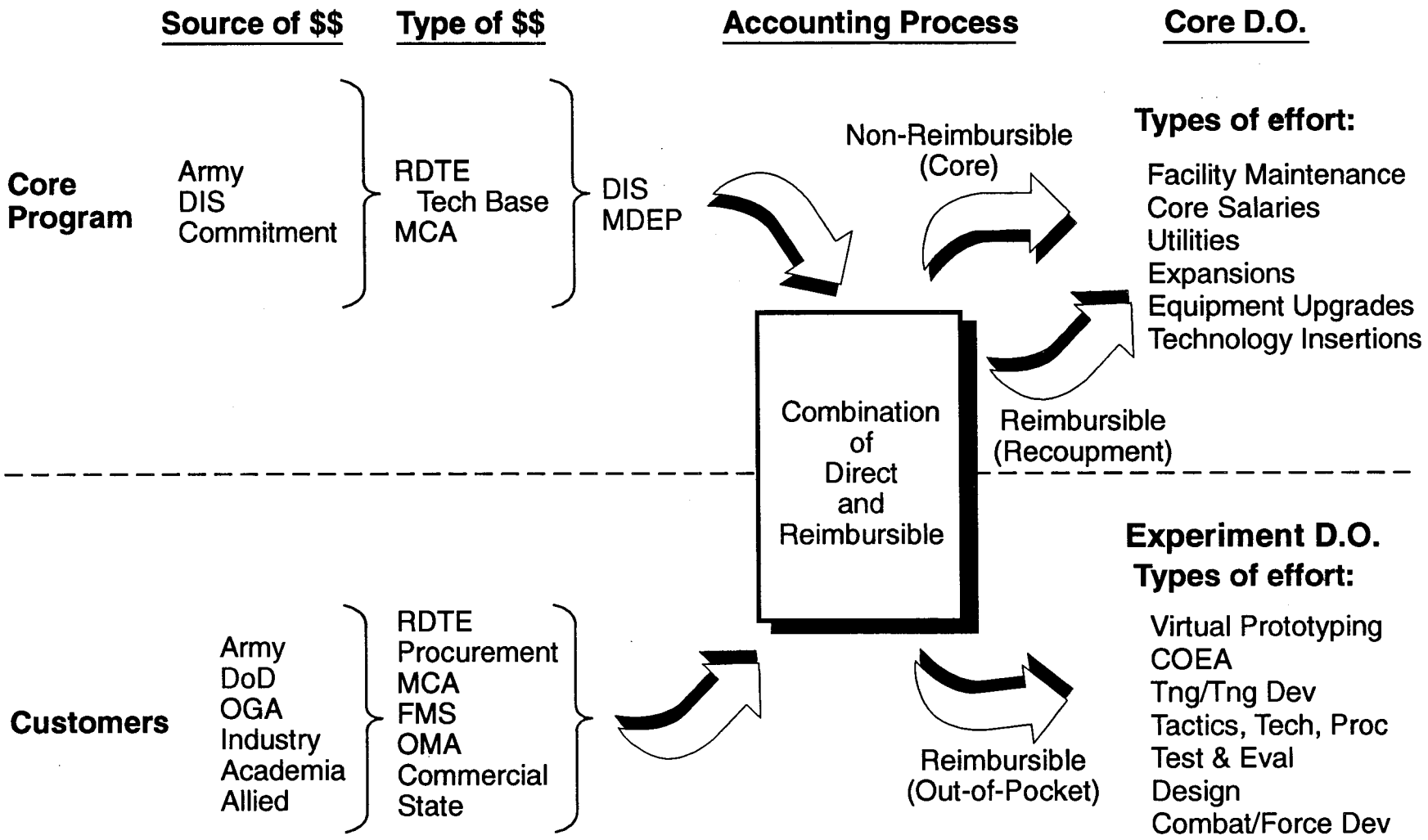
Proposed DIS Funding Process

Two activities are accounted for: Providing the Core Capability and Customer Experiments/Applications (using the capability).

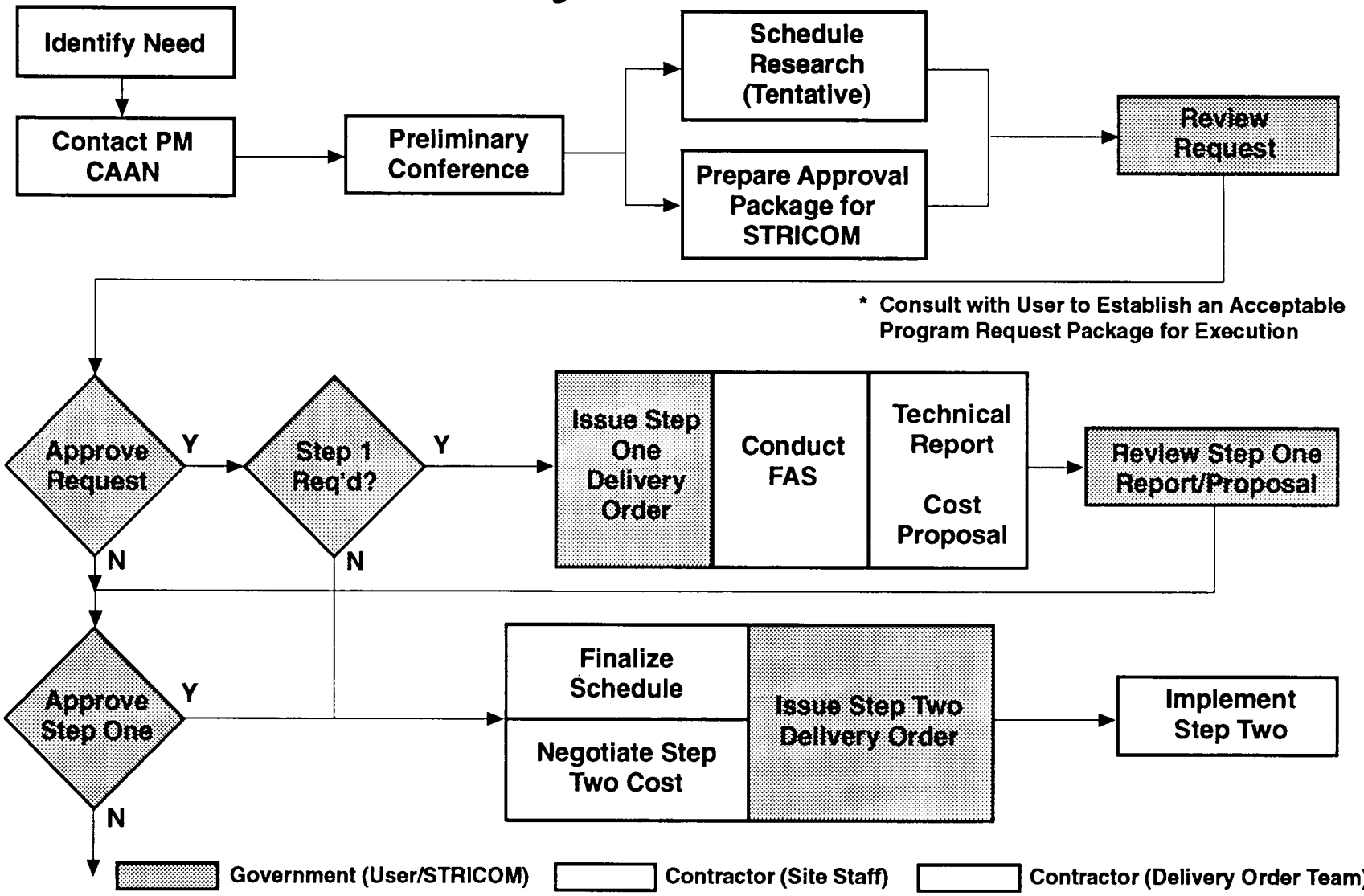
The Core is funded by the Army via the DIS MDEP and supplemented from fees collected from customers as part of their costs for conducting an application.

Applications, to include development of **customer unique** hardware/software, are funded by the customer.

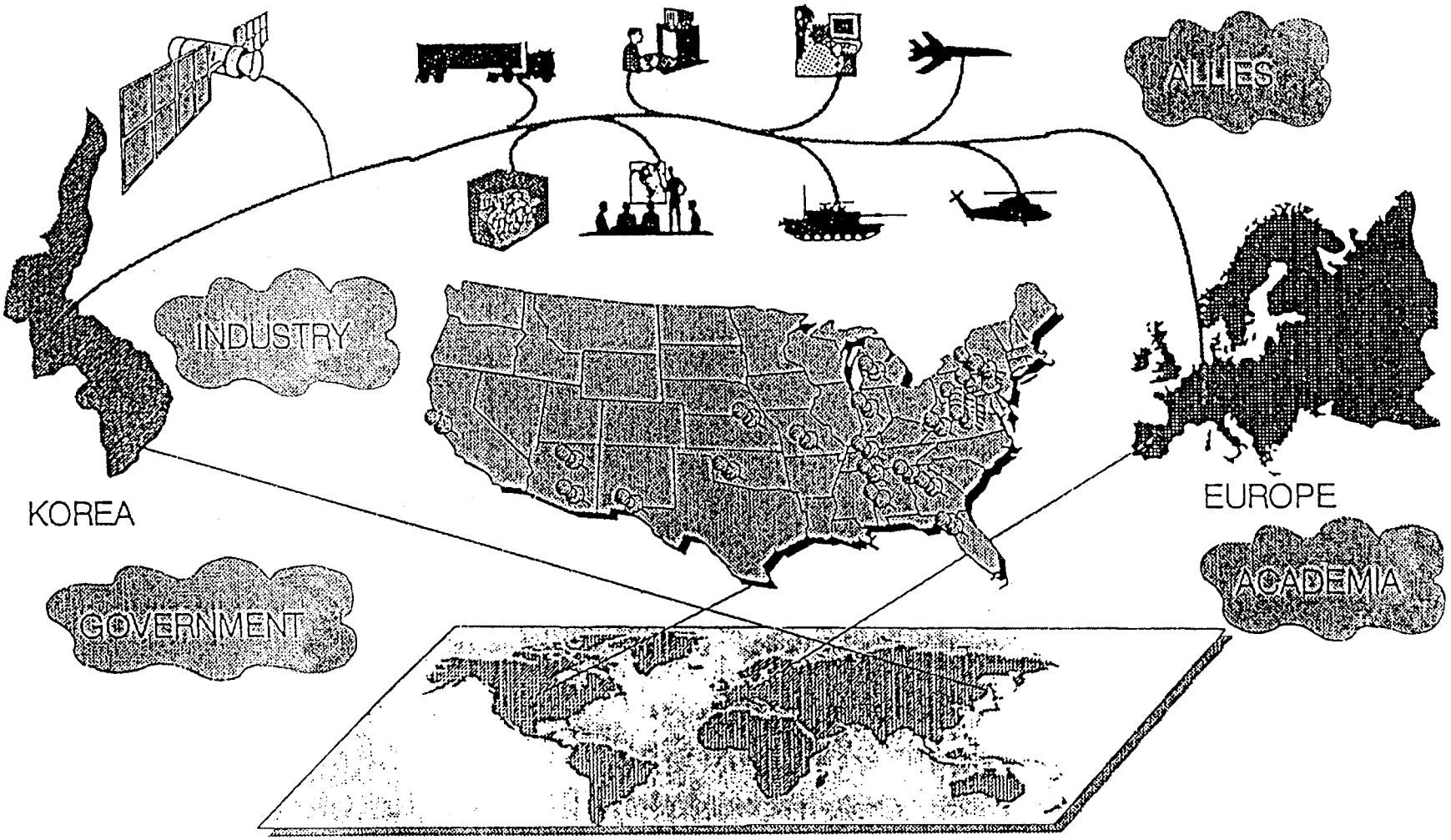
The DIS MDEP Funding Process



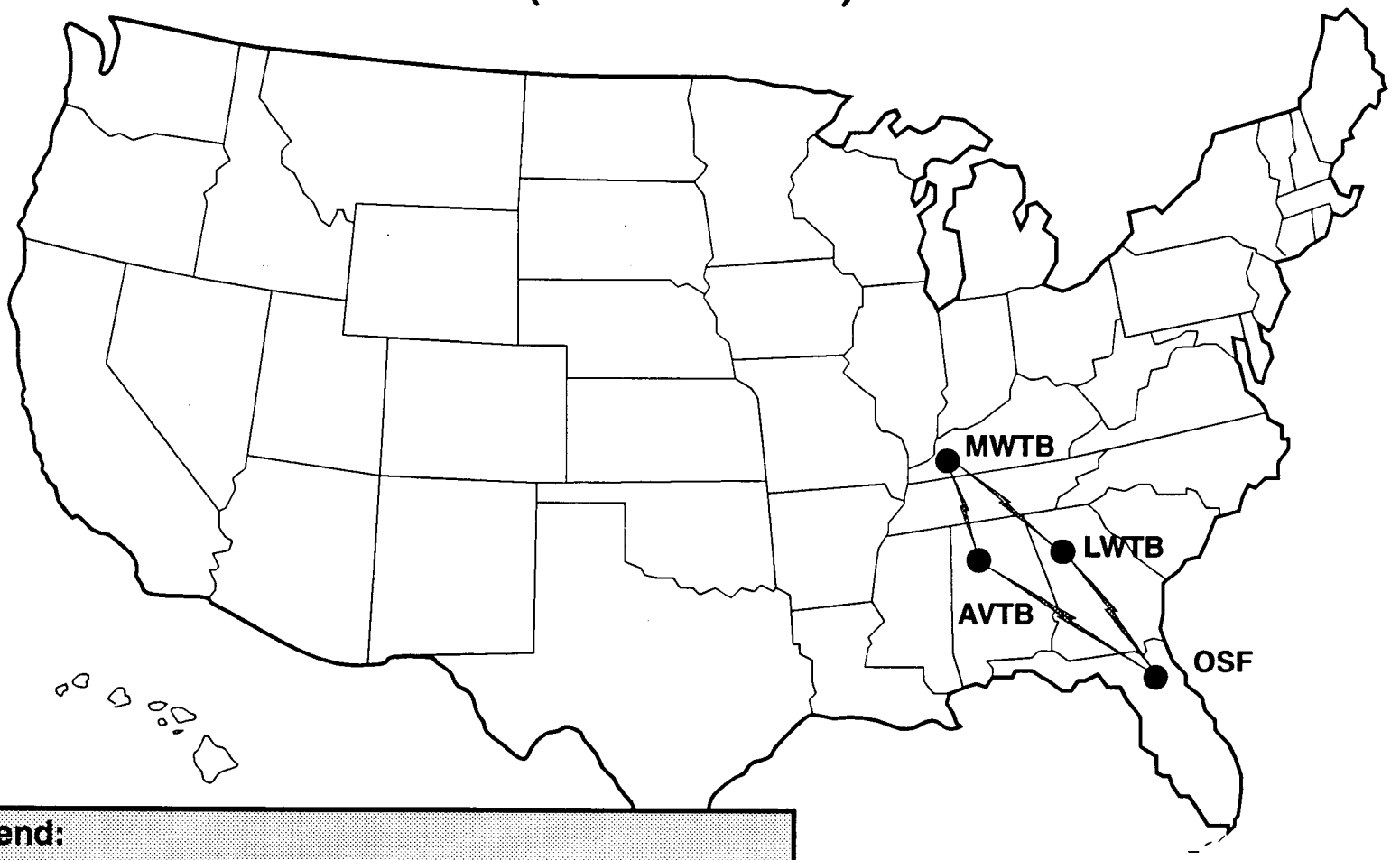
Core DIS Facilities (CDFs)
Delivery Order Process



21st Century Combined Arms Assessment Network



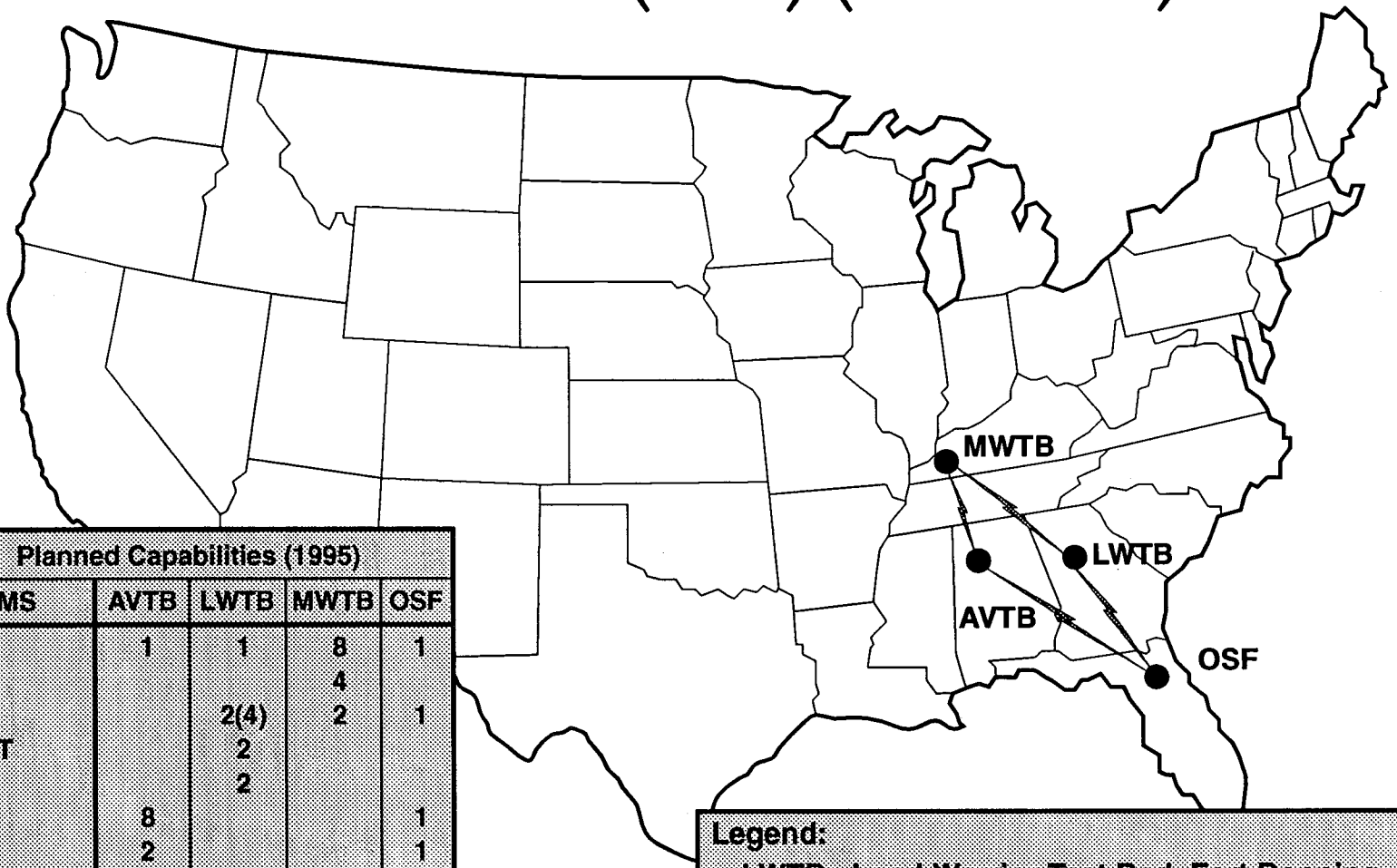
U.S. Army Core DIS Facilities (CDF)
(Test Beds)



Legend:

LWTB: Land Warrior Test Bed, Fort Benning, GA
MWTB: Mounted Warfare Test Bed, Fort Knox, KY
AVTB: Aviation Test Bed, Fort Rucker, AL
OSF: Operational Support Facility, Orlando, FL

FY95 Planned Capabilities at the U.S. Army Core DIS Facilities (CDF) (Test Beds)



Planned Capabilities (1995)				
SIMS	AVTB	LWTB	MWTB	OSF
M1A1	1	1	8	1
M1A2			4	
M2M3		2(4)	2	1
LOSAT		2		
NLOS		2		
RWA	8			1
FWA	2			1
GADS	2			
SAFOR	4	3	4	2
DIS Package	1	1	1	1
Secure	S	S	S	S

Legend:
LWTB: Land Warrior Test Bed, Fort Benning, GA
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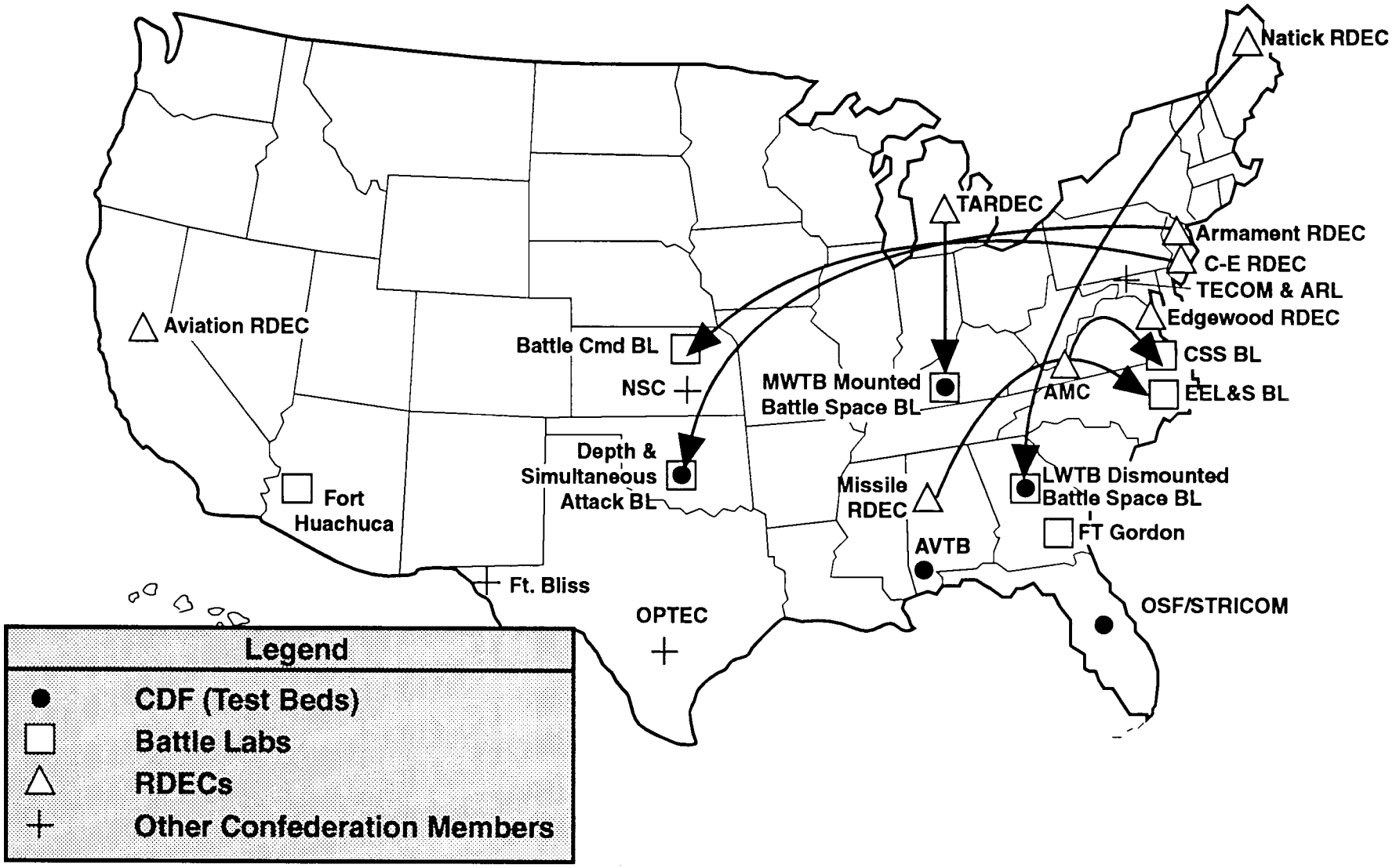
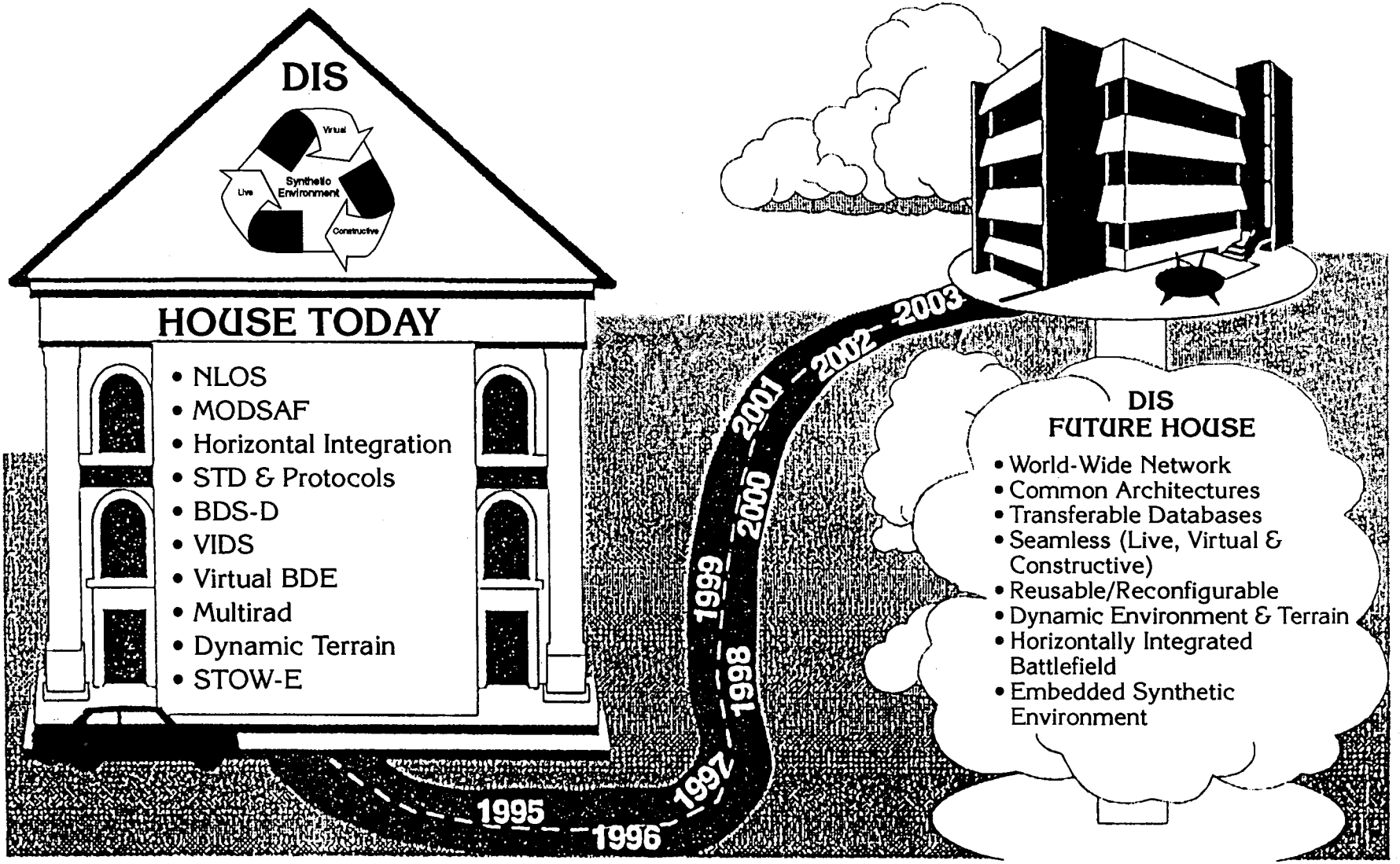
DIS Confederation

"BATTLE LABORATORY SUPPORT"



Modernizing the Synthetic Environment



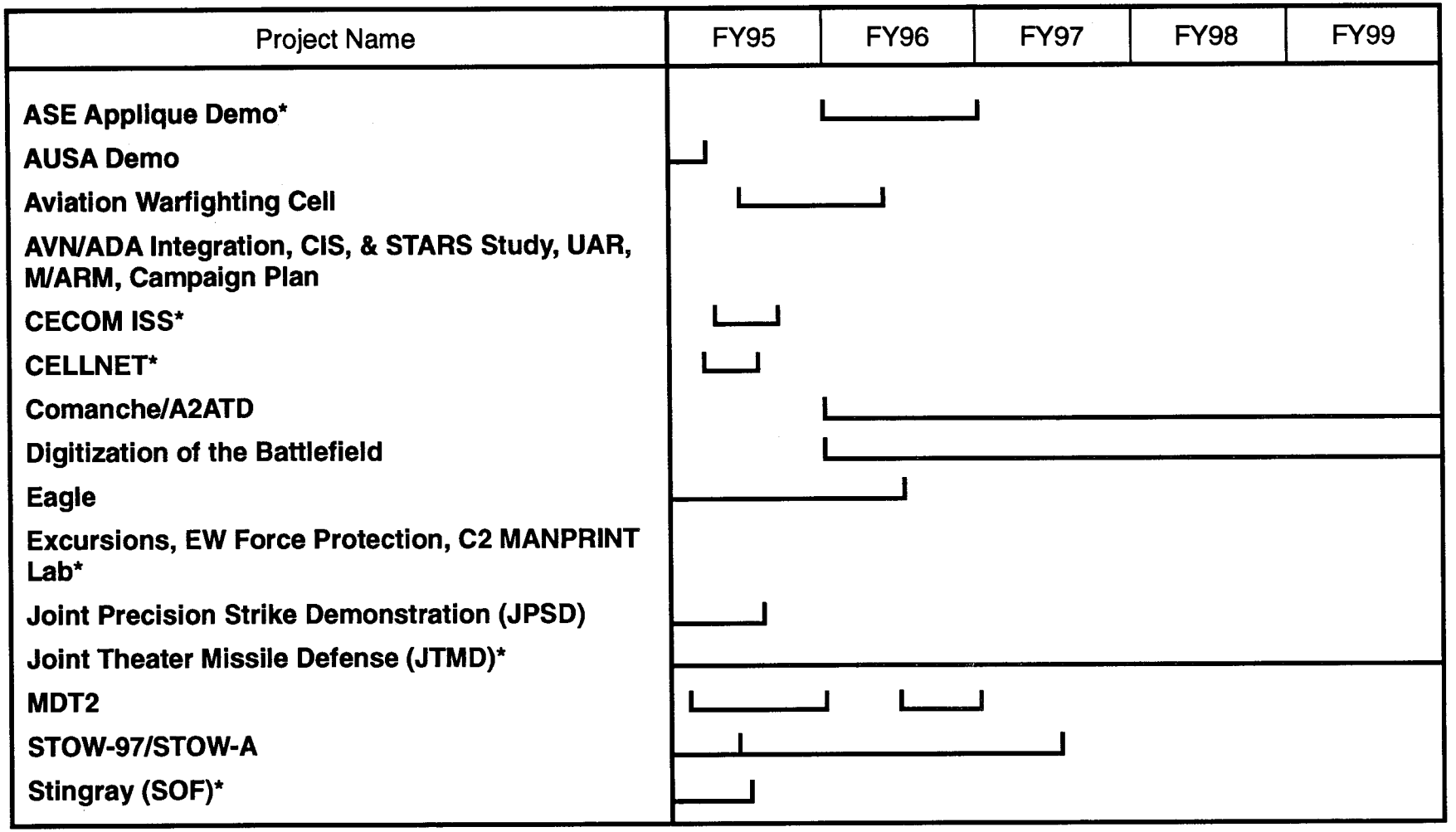
Mounted Warfare Test Bed Activities, Fort Knox

Project Name	FY95	FY96	FY97	FY98	FY99
ACT II*					
AL QUARIN*					
Anti-Armor Advanced Technology Demonstration					
CCTT Quickstart*					
Battlefield Combat Vehicle ID (BCIS)					
Combined Arms Command and Control (CAC2)*					
Crewman's Associate ATD					
Force XXI TS*					
Forced Dispatch*					
FPE3					
Helmet Mounted Display					
MDT2					
Project Sword					
Skallnotty*					
Vehicle Integrated Defense Systems (VIDS) Management Information					
Virtual Brigade					

* At the time of publication, the description for this project was not available pending final completion.

SPECIAL NOTE: Many additional projects were being developed when the STRICOM Command Forecast went to publication. For an updated list of current and planned projects at each Core DIS Facility (CDF Test Bed), please contact PM CANN at DSN 960-8826 or commercial (407) 381-8826.

Aviation Test Bed Activities, Fort Rucker



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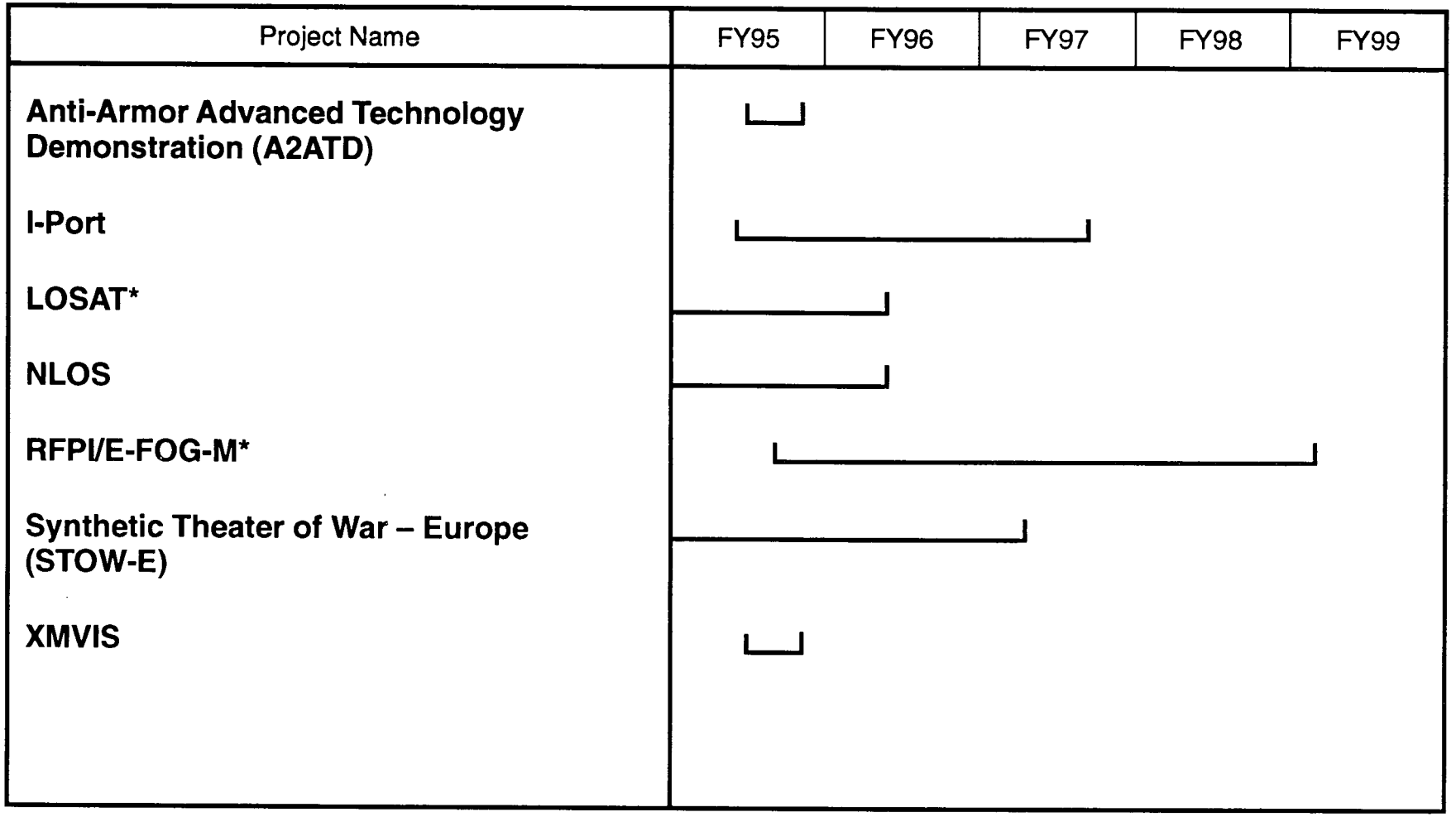
Land Warrior Test Bed Activities, Fort Benning



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PM DIS/CAAN
Project Descriptions

Anti-Armor Advanced Technology Demonstration (A2 ATD)

The purpose of the Anti-Armor ATD project is to develop and demonstrate a Verified, Validated, and Accredited (VV&A) Distributed Interactive Simulation (DIS) capability to assess anti-armor weapons system virtual prototyping, concept formulation, requirements definition, effectiveness evaluation, and mission area analysis in a combined arms battlefield environment.

Aviation Warfighting Cell (AWC)

Integration into the aviation test bed and expansion of a current PEO initiative which will provide one AH-64 Longbow and one comanche cockpit and additional player stations to form a team of attack and scout aircraft. The AWC will be integrated into existing test bed capabilities and expanded with more manned cockpits and will be used in the development of the Aviation Combined Arms Tactical Trainer (AVCATT) and other programs including test and/or evaluation of new equipment proposals, development of new equipment, development of new/revised doctrine, development of new/revised tactics, and development of new training programs, and/or processes.

Aviation/Air Defense Artillery Integration (AADAI)

Investigate the feasibility of exchanging LNOs between AVN and ADA organizations to facilitate the closer exchange of information and working relationship between AVN and ADA. Goal is to enhance mission effectiveness and force protection. Will involve an assessment of current and future equipment changes required to accomplish the goal. Expect to reveal changes to TOC layouts and equipment.

PM DIS/CAAN
Project Descriptions (Cont)

Battlefield Combat Identification (BCIS) ATD

Objective of the ATD is to develop and demonstrate techniques (both combat ID and situation awareness) that will minimize fratricide during ground-to-ground and air-to-ground engagements. An additional goal will be to develop and integrate/fuse multi-sensor Battlefield Combat Identification System (BCIS) data into an automated command and control system. The 'integration' will be capable of disseminating and displaying information to the required echelons on the battlefield by incorporating the combined arms command and control ATD effort to demonstrate C2 functionality and shared situational awareness.

C2 MANPRINT Lab

The lab will use simulation to determine the best avenue for communication between the TOC, AVTOC, C2 aircraft and the attack and scout aircraft. Goal is to develop the future tie ins between intelligence and fighting forces.

Campaign Plan Excursions

Objective is to validate brigade and below user requirements for information exchanges. The first step is to use a semi-automated simulation process to gather basic data required for future simulations. Data will be gathered using a TRADOC derived scenario and a brigade force structure identical to that to be fielded for the BDE 96 ad.

CELLNET

Program currently under development which will hook AH-64 combat mission simulators and UH-60 flight simulators through the AVTB onto the DSI Network. Will provide expanded training and development opportunities.

PM DIS/CAAN
Project Descriptions (Cont)

Combat Identifier System (CIS)

Development of an identification system for shooters to positively identify friendly or unknown personnel. Program is to demonstrate and assess interrogation/response type cooperative target identification and situational awareness capabilities to protect individual soldiers from engagement by friendly mounted forces, dismounted forces, fixed wing aircraft, and rotary wing aircraft.

Crewman's Associate ATD

A Tank-Automotive RDEC sponsored project to investigate further rapid virtual prototyping of the future tank vehicle. The project will investigate two-man crew configurations and soldier machine interface issues using soldier-in-the-loop simulation.

Digitization of the Battlefield

Brigade 96 development of systems and software to fully digitize a brigade for full command and control and location identification of all personnel and equipment in the brigade. Follow ons will Corps 97, for Corps level digitization and Division 99, for division level digitization.

Eagle

Corps battle simulation which has the capability to move more entities over the DSI network by moving them as corps/brigade groups and then exploding them into entities at the other end. Integration into the aviation test bed will take place in 95.

PM DIS/CAAN
Project Descriptions (Cont)

Electronic Warfare Value Added for Force Projection Operations

Objectives are to determine what are the best targets for engagement by electronic warfare (EW) and directed energy warfare (DE) systems; what targets are least suitable for EW/DE engagements; can EW/DE defeat, suppress or degrade threats for which we have no countermeasures; and what is the optimal mix of EW/DE systems and conventional systems for early entry force projection operations?

FPE III (Force Protection Experiment)

The objective of this experiment is to investigate the effects on the battlefield decision-making process at platoon, company, and battalion levels of various combinations of a digital command and control system, a vehicle identification system, a vehicle hit avoidance system, and a supplemental digital situational awareness system. The experiment will use manned M1A1 and M2 simulators to compare baseline to three experimental conditions against threat weapon platforms.

FXXI TS (Force XXI Training Strategy)

Formerly known as Virtual Brigade, this experiment will allow the U.S. Army to train and evaluate an armored brigade/regiment using all training aids, devices, simulations, simulators to intensify conventional training methods.

PM DIS/CAAN
Project Descriptions (Cont)

Helmet Mounted Display (HMD)

The HMD is a Directorate of Combat Developments (DCD), Ft. Knox, KY, project to determine the feasibility of employing a helmet mounted display device for the Tank Commander in a "popped-hatch" mode. The HMD would be tethered to the IVIS (Inter-Vehicular Information System) and the CVCC (Combat Vehicle Command and Control) in the hull of the tank, enabling the TC to have increased and continued battlefield awareness during all phases of a tactical operation. A variety of tactical scenarios will be executed with soldiers-in-the-loop.

I-PORT

A Tech Base effort to meet the immediate requirement for a virtual simulation capability. I-PORT will fully immerse the individual dismounted combatant within the virtual environment and enable the warfighter to perform the aural, visual, mobility, physical, and personal/inter-personal activities inherent in squad and platoon level tactical operations within a combined arms team. The system, in various physical, cost, and capability configurations, will ultimately support a wide-range of requirements to include analysis, virtual prototyping, Battle Lab experiments, institutional and unit training, and military operational rehearsals.

PM DIS/CAAN
Project Descriptions (Cont)

Joint Precision Strike Demonstration (JPSD)

JPSD is a series of on-going demonstrations that will continue through FY99, culminating in an Integrated Multi-Thrust Demonstration with the Air Force, Navy, Advanced Research Projects Agency (ARPA), and others. The objective is to develop and demonstrate an Army adverse weather, day/night, end-to-end, sensor-to-shooter, precision strike capability. The intent is to build upon current precision strike capabilities, leveraging the capabilities of the Battle Labs, the Army's Integrated Battlefield Targeting Architecture Study (IBTAS), and others. The Precision Strike (PS) challenges include: the reduction of the timeline required to detect, identify, communicate, and eliminate PS targets; and the conduct of battle damage assessment.

JSTARS Feasibility Study

Program to determine the feasibility and value added of placing an FSO onboard the JSTARS aircraft. Will involve a determination of equipment changes to accommodate an FSO.

Maestro Army (M/ARM)

Objectives are to determine the feasibility of M/ARM as a commander battlefield assistant in both simulation and actual use during brigade and below exericses; provide insights concerning the ability of M/ARM to increase the situational awareness within a TOC at all levels; and to examine M/ARM capabilities for connecting existing communication (LEGACY) systems.

PM DIS/CAAN
Project Descriptions (Cont)

MDT2 (Multi-Service Distributed Training Test Bed)

The MDT2 experiment will demonstrate the capability to conduct meaningful multi-service, combat mission training using DIS technologies and synthetic battlefields. The focus for this training experiment is to demonstrate the performance measurements and feedback systems to be used for close air support (CAS) training. MDT2 will link simulators and simulations of all four services. Airframe crew simulators of Air Force pilots at Armstrong Labs, Mesa, AZ and Marine and Navy pilots at Systems Engineering Test Directorate, Patuxent River, MD, will emulate attack and forward air control aircraft. They will support the conduct of ground force operations by Army elements in Advanced Distributed Simulation vehicles and tactical operations center at the MWTB, Fort Knox, KY.

Non-Line of Sight, Phase 2 Management Information

The NLOS 2 Delivery Order will facilitate the conduct of the Non-Line-of-Sight, Phase 2 experimentation at the Land Warrior Test Bed (LWTB), Fort Benning. This involves providing software enhancements and upgraded image generation systems to the NLOS devices at the Aimet facility to facilitate the conduct of the NLOS 2 experiment. This experiment will collect and evaluate data regarding the combined arms employemnt of the NLOS weapons system with specific emphasis on anti-armor employment. The effort will also involve development of documentation and the test plan, conducting the study and providing a final report.

PM DIS/CAAN
Project Descriptions (Cont)

Project Sword Management Information

Project Sword is a Ft. Knox Command and Staff Department requirement to verify Programs of Instruction and an exportable training Package for the Saudi Arabian Land Forces. This project will recommend approaches and associated cost to verify the need for, and quality of training provided to equip the Saudi Arabian Government with M1A2 Abrams main Battle Tanks. Project Sword will support 296 hours of instruction, spread over a 15 month period and in concert with the cultural and religious requirements of a foreign government. The program management tasks will be performed under the direction of the ADST Program Manager by ADST Program office personnel. Field Engineering Support and assistance to General Dynamics Land Systems will be performed by the contractor Training and Technical Services Personnel who currently manage the daily site activities at Ft. Knox. The critical tasks of Battlemaster and SAFOR operations as well as day to day maintenance of required Scenario support will be accomplished by resident contractor personnel.

STOW-A

From STOW and the subset STOW-E, ARPA will develop an architecture to use STOW as a tool for development and training.

PM DIS/CAAN
Project Descriptions (Cont)

Synthetic Theater of War – Europe

The purpose of STOW-E is to develop a Synthetic Theater of War environment by linking virtual Simulator Networking (SIMNET) and a constructive simulation (Brigade/Battalion Battle Simulation) with live maneuver forces (instrumentation) at the Combat Maneuver Training Center (CMTC). The STOW-E concept will allow for the inclusion of other simulation systems which are DIS compliant to enter the network and participate in an exercise. The near-term requirement for STOW-E is to create a Brigade training environment around the single, live battalion deployed at the CMTC.

Synthetic Theater of War (STOW-97)

The STOW program goal is to have 100,000 virtual, constructive and live entities on the DIS network at one time performing a major tactical exercise. It is to combine simulation sites and Army, Navy and Air Force live entities.

Unmanned Aerial Vehicle (UAR)

Objectives are to provide system parameters and capabilities in simulation for the hand launched (H) UAR and the maneuver variant of the Joint Tactical UAR (J-UAR) to operate as part of the digitized brigade simulation exercise in 1995; assist in determining employment parameters for the J-UAR; and determine optimum airborne sensor package.

PM DIS/CAAN
Project Descriptions (Cont)

Vehicle Integrated Defense Systems Management Information (VIDS)

VIDS is an experiment designed to provide a relatively low-cost and rapidly deployed BDS-D simulation platform, to facilitate the conduct of simulated threat engagements, in order to evaluate the operational effectiveness and suitability of various electronic survivability suites of sensors and countermeasures. The overall project goal is to provide PM-SURVIVABILITY, the MWTB, and DCD (Armor School), data to review and use to revise their survivability requirements in areas such as: type of response given specific threats, response times per specific threat, angles of attack to be protected from, and multiple attack situations. This combined approach will provide quantitative measures of survivability effectiveness, and provide a platform for training Army Armored personnel in tactics, techniques and procedures relative to usage of VIDS equipment on armored combat vehicles.

Virtual Brigade

The goal of the Virtual Brigade Program is to develop a comprehensive methodology which employs intensive Tactical Engagement Simulations and the appropriate mix of TADSS and field training to achieve significant increases in effectiveness and efficiency in individual, staff and unit collective training at the brigade level. This program will evaluate all existing and near-term available TADSS to prescribe a strategy which will maximize their utility in training a brigade composed of both active and reserve component forces. This program will exploit DIS technology to link heterogeneous simulations and simulators (SIMNET, Janus, and BBS) to provide a robust training environment for a brigade commander. The

Continued on next page

PM DIS/CAAN
Project Descriptions (Cont)

Virtual Brigade (Continued)

program will define and develop configurable simulators which permit multiple types of units to train on equipment configured to represent their unique Modified Table of Organization and Equipment (MTO&E's). All available and emerging forms and functions of DIS will be leveraged to the maximum extent possible to increase the Virtual Brigade's combat effectiveness and to develop a state-of-the-art methodology for training units with either current or leading edge technologies. This program is both a demonstration of the latest DIS technologies and an exploration and forcing function that makes DIS more useful to both the training and combat development communities. If the program is continued, it will become a test bed for future technologies. Increased DIS capability will emerge as a result of the efforts to define and build configurable simulators.

XMVIS

The XMVIS Advanced Warfighting Experiment will be a software simulation of a threat land combat laser weapon. Intelligence data from XMVIS will be provided by the Foreign Science and Technology Center. The AWE will demonstrate the effectiveness of a threat laser in realistic battlefield scenarios.